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ORIGINAL ARTICLES.

THE DIFFERENTIAL DIAGNOSIS OF VARIOUS FORMS OF MALARIAL FEVERS BY MICROSCOPIC EXAMINATION OF THE BLOOD.

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To bring some order out of the chaos that surrounds obscure varieties of malarial and other forms of fever, greater exactness of observation is required. When we have one cause and one effect, the conclusion can be easily determined; but when there is a multiplicity of causes giving rise to confused results, the individual causes are often difficult to isolate and establish. We have obtained relatively few facts which can be considered absolute in the life history of the different forms of malarial parasites. That these germs gain entrance to the blood, that they grow at the expense of the corpuscles, that they finally break down the globules, that they undergo segmentation, and that these processes give rise to fever, has been proved beyond any reasonable doubt. Some difference of opinion still exists as to (1) whether there is but one specific type of germ giving rise to all the varieties of malarial fever, or (2) whether there is a different organism for each form. Laveran and the French school incline to the former view, while the Italian school, with Golgi at its head, and the American observers hold to the latter belief.

We should be careful, then, to verify by experience the identification of one type of germ, associate it with a specific fever, vary the circumstances, and confirm that experiment by repeated examinations, in order to present conclusive evidence.

This has been undertaken by Thayer and Hewetson, whose observations have extended over a series of 600 cases. This paper will, therefore, adhere in the main to the words used by them, as well as to the microscopic appearances which they have so accurately delineated. Adopting their classification of the organisms, herewith is submitted as an aid a differential diagnosis of the various forms of malarial parasites as they appear during different periods of their cycle.

SUMMARY.

The paroxysm is divided into (1) the chill, (2) the

fever, and (3) the sweating stage. The chill has no fixed place during the rise of fever; it may occur early or it may only take place at the acme; it usually occurs early in the paroxysm. The interval in malarial fevers is the time intervening between the beginning of one paroxysm and that of the next. It is to be distinguished from the *remission* or the *intermission*, which is the period between the end of one paroxysm and the beginning of the next. In quotidian fever the interval is twenty-four hours, and the paroxysms return daily at the same time. In tertian fever the interval is forty-eight hours, and the paroxysms return every other day at the same hour. In quartan fever the interval is seventy-two hours. In the tertian form we predict that a paroxysm will occur at once if radiating lines are seen to appear with the concentration of the pigment in the center of the ameboid cell.

The administration of quinin makes it difficult and often impossible to find the youngest forms of the plasmodia in the blood. It is essential in making a correct diagnosis that the examiner should have a good microscope with an oil immersion lens. No one should undertake the study of pathologic blood without having previously studied normal blood. One type of organism never changes its original type. In order to differentiate the special type of organism, it is best to select the blood during the cold stage of the paroxysm. It can only be identified specifically by having an acquaintance with the different varieties. In this country, the organisms of the estivo-autumnal and tertian varieties of malarial fever are the ones most commonly found, as the quartan occurred only five times in a series of over six hundred cases observed by Thayer and Hewetson.

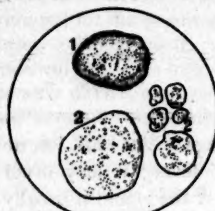
We differentiate, then, by observing (1) their relative size, (2) the movement of pigment, (3) the color of the corpuscles, (4) the manner of division, (5) by the study of the extra-cellular organisms, and (6) by the contents of the leucocytes.

There may be infections by more than one group of the same kind of parasite, which infection occurs at different times; they will mature at different intervals, and there will be irregular chills and fever; or there may be infections at different or the same time, by different varieties of organisms, also giving rise to irregular chills and fever. In simple tertian fever there is infection by only one group of the same kind of parasite, but if there is a double infection

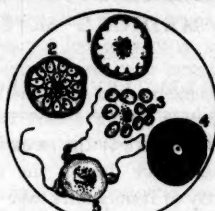
Immediately before the Paroxysm.

During the Paroxysm.

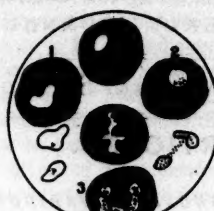
During Decline of the Paroxysm.

After first Week or Ten Days,
or after Treatment has Begun.

Tertian.—Field 1.



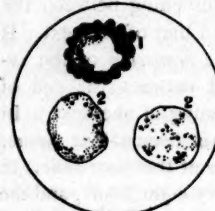
Tertian.—Field 2.



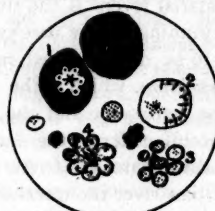
Tertian.—Field 3.



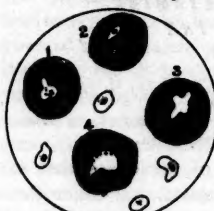
Tertian.—Field 4.



Quartan.—Field 5.



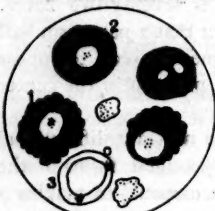
Quartan.—Field 6.



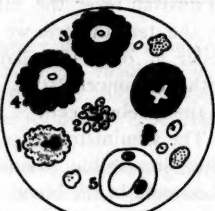
Quartan.—Field 7.



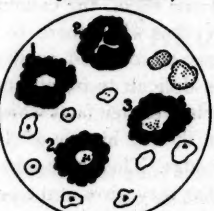
Quartan.—Field 8.



Estivo-autumnal.—Field 9.



Estivo-autumnal.—Field 10.



Estivo-autumnal.—Field 11.



Estivo-autumnal.—Field 12.

MICROSCOPIC APPEARANCE OF THE BLOOD IN THE DIFFERENT FORMS OF MALARIAL FEVER.

IMMEDIATELY BEFORE THE PAROXYSM.

Tertian.	Quartan.	Estivo-Autumnal.
<ol style="list-style-type: none"> 1. The organism is now full-grown, pale, indistinct, and ameboid (field 1, Fig. 1). Sometimes fills the entire corpuscle, which has become larger and decolorized. The corpuscle may at this stage be represented by a faint, pale rim about the parasite. 2. Leucocytes do not contain similar blocks of pigment as the estivo-autumnal. 3. Pigment is reddish brown. 4. Occasional pigmented bodies may be observed outside of the red cells free in the plasma (field 1, Fig. 2), some of which are twice as large as the red cell, and often undergo gemination (budding) process. 5. Some of these extracellular bodies develop flagella, usually about twenty minutes after blood has been withdrawn. 6. Period of incubation, ten days. 7. Cycle of development, forty-eight hours. 8. Chills in eighty-eight per cent. of the cases. 9. In twenty-nine per cent. of cases there are more than one group of organisms present at the same time. Double tertian in twenty-nine per cent. of the cases. Out of 542 cases of malarial fevers, sixty per cent. were tertian (Thayer and Hewetson). 	<ol style="list-style-type: none"> 1. The organism, when full-grown, is smaller than those of the tertian type (field 5, Fig. 1), and is more refractive. The corpuscle, instead of being expanded and decolorized, appears smaller, shrunken, and darker in color, often resembling old brass. 2. Leucocytes do not contain similar blocks of pigment as estivo-autumnal. 3. The pigment is in larger blocks than tertian, and is darker in color. 4. The extracellular bodies are rarely larger than the red corpuscles (field 1, Fig. 2). 5. Extracellular bodies develop flagella usually about twenty minutes after blood has been withdrawn from circulation. 6. Period of incubation, thirteen days. 7. Cycle of development, seventy-two hours. 8. Of the five cases observed by Thayer and Hewetson, all had chills. 9. Out of 5 cases in the 542 observed by Thayer and Hewetson, there was a triple infection in three cases. No double infections. 	<ol style="list-style-type: none"> 1. The full-grown forms are generally not one-third as large as the red corpuscles, which have the same appearance and are crumpled same as in quartan type (field 9, Fig. 1). Some of these organisms are seen to contain a small, central, solid clump of motile or non-motile pigment granules about the center of the hyalin body. At a certain stage (field 5, Fig. 2) it seeks the internal organs (spleen, bone-marrow, etc.), where it undergoes segmentation. 2. They are always associated with leucocytes containing similar blocks of pigment (field 9, Fig. 3). 3. The pigment granules are fewer in number and smaller in size than in the other varieties of parasites. 4. Extracellular bodies of different sizes and shapes. 5. Flagellation. 6. Period of incubation, three days. 7. Cycle of development, twenty hours or less to forty hours or more. 8. Chills in sixty-two per cent. of cases. 9. Several groups of organisms are often present at same time. Out of 542 cases, twenty-nine per cent. were estivo-autumnal.

DURING THE PAROXYSM.

Tertian.	Quartan.	Estivo-Autumnal.
<ol style="list-style-type: none"> 1. At the time of the paroxysm, the reddish brown pigment gathers in a clump in the center of the organism, while the rest of the protoplasm looks pale and granular, with radiating lines toward the center. This striation first appears near the periphery (field 4, Fig. 1). These lines become more distinct, until finally the central clump of pigment is surrounded by fifteen or twenty glistening hyalin segments, irregularly arranged (field 2, Figs. 2, 3). This segmentation (sporulation) is always coincident with the paroxysm. At this time we also see similar hyalin bodies within the red cells (field 2, Fig. 4). Segmentation may also occur before the organism is full-grown. 2. Affected corpuscle expanded and decolorized. 3. Leucocytes do not contain similar blocks of pigment as estivo-autumnal. 4. Pigment reddish brown. 5. In twenty-nine per cent. of the 542 reported cases there was more than one group of organisms present at the same time. 6. Phagocytosis may be observed by the polymorphonuclear neutrophils. 7. Flagellate bodies may be seen (field 2, Fig. 5). 8. Average duration of paroxysm, from eleven to twelve hours. In twenty-nine per cent. of cases of 542 reported, there was a double tertian infection, giving rise to quotidian paroxysms. 	<ol style="list-style-type: none"> 1. The process of the accumulation of pigment in the center of the quartan organism gives pictures which one does not see in the case of the other varieties of parasites, namely, the arrangement of the pigment in a star-shaped form (field 6, Figs. 1, 2), as though it tended to arrive at the center of the body by means of currents which flow inward from the periphery. When the paroxysm occurs, the black pigment gathers in the center in a solid clump, while the protoplasm looks granular; and finally a radial striation occurs, and from six to ten hyalin segments are set free (field 6, Figs. 3, 4). 2. The affected corpuscle is usually smaller than the unaffected, and the color is darker than normal. 3. Leucocytes do not contain similar blocks of pigment as estivo-autumnal. 4. Pigment darker than tertian. 5. Usually several groups of organisms present at same time. 6. Phagocytosis. 7. Flagellate bodies. 8. Average duration of paroxysm ten to eleven hours. Out of the 5 cases observed of the 542 cases, there was a triple quartan infection in 3 instances, giving rise to quotidian paroxysms. 	<ol style="list-style-type: none"> 1. No full-grown organisms are present in the peripheral circulation at this time, and blood must be drawn from the spleen if we desire to see segmentation (field 10, Figs. 1, 2). The advanced segmentary form shows no traces of the corpuscle. Both in the number of segments and manner of division, this type of organism closely resembles the tertian variety. Sometimes, if blood is taken from the peripheral circulation, we may see refractive, oval-shaped bodies situated in crumpled corpuscles having a dark greenish cast. As it becomes larger, there is a small collection of non-motile or slightly motile pigment granules about the center of the body (field 10, Figs. 3, 4). At this time the organism is about one-third diameter of red cell, and has a peculiar homogeneous refractive appearance. 2. The affected corpuscles are not decolorized, but frequently crumpled and in color resemble old brass (field 10, Fig. 3). 3. These highly refractive organisms with a solid clump of pigment in the center are always associated with leucocytes containing similar blocks of pigment (field 10, Fig. 5). 4. Pigment granules seen in the parasites of peripheral blood usually in one solid clump. 5. Usually several groups of organisms present at the same time. 6. Phagocytosis. 7. Flagellate bodies. 8. Average duration of paroxysm, twenty to twenty-four hours. Quotidian paroxysms in 30 per cent. of cases; tertian, 6 per cent.; continued fever in 34 per cent.

DURING DECLINE OF THE PAROXYSM, OR AFTER THE COLD STAGE.

Tertian.	Quartan.	Estivo-Autumnal.
<ol style="list-style-type: none"> 1. Fresh, round, hyalin bodies are seen within the red corpuscles, with a depression in the center (field 3, Figs. 1, 2, 3). Similar extracellular hyalin bodies are also seen. 2. The ameboid movement is very active, quickly changing to ring-shape, etc. 3. Affected corpuscle often larger in size and often decolorized. 4. Pigment (after a certain time) in small granules of a reddish brown color, and very actively moving, breaking into fragments. 5. Full-grown forms undergo segmentation. 	<ol style="list-style-type: none"> 1. Color is somewhat more refractive than tertian type (field 7, Figs. 1, 2). Extracellular hyalin bodies seen (Figs. 5, 6, 7). 2. First stage of the growth is same as in tertian, except that the ameboid movement of the organism is slower, less extensive, has a sharper outline, and is more refractive than tertian (field 7, Figs. 1, 2, 3). 3. As the parasite grows, corpuscle not decolorized. 4. Pigment (after a certain time) is in larger clumps, darker in color, and, instead of being very active, is only slightly moving. Fragmentation of pigment slower. 5. Some of the full-grown forms do not segment, but undergo certain changes. The pigment, which is seen during paroxysm to be slow in action, will be seen to move rapidly, while the body may expand to a size larger than a red cell. These bodies are very transparent, and closely resemble the analogous forms of the tertian type. 	<ol style="list-style-type: none"> 1. Hyalin bodies somewhat smaller in size than in the tertian and quartan (field 11, Figs. 1, 2). 2. First stage of growth, same as other varieties, is more refractive than the tertian type, and may have a ring or cross shape (field 11, Fig. 2). Body with cross shape may suddenly expand half over the corpuscle, losing its original shape. 3. Affected corpuscle normal in color until later. 4. Pigment not so large in number as tertian, and is finer than quartan. 5. Segmentation occurs in spleen.

DURING DECLINE OF THE PAROXYSM, OR AFTER THE COLD STAGE.—*Continued.*

Tertian.	Quartan.	Estivo-Autumnal.
<p>6. Besides these forms we see large extracellular pigmented bodies twice the size of red cells. These may often be seen to break up into smaller bodies (segmentation?), while at other times they may show a long, tail-like, non-motile process containing sometimes a few pigment granules (field 3, Fig. 4).</p> <p>7. The large extracellular forms may become fragmented. A small prominence will be noted upon one side of the body, which rapidly becomes shut off from the larger portion, forming a separate pigmented body. In this manner, one large form may give rise to four or five smaller bodies.</p> <p>8. Vacuoles may be observed in these large extracellular bodies (field 3, Fig. 5).</p> <p>9. Flagellæ may be developed from the extracellular bodies.</p> <p>10. Flagellate bodies may undergo fragmentation.</p> <p>11. Phagocytosis.</p>	<p>6. Same as tertian (field 7, Fig. 4).</p> <p>7. The full-grown form (field 7, Fig. 4) may undergo fragmentation.</p> <p>8. Vacuoles may be found in these full-grown bodies.</p> <p>9. Flagellæ may be developed from these full-grown bodies.</p> <p>10. Same as tertian.</p> <p>11. Phagocytosis.</p>	<p>6. Several groups of organisms often present at same time, but we will not see the large extracellular forms observed in the other varieties.</p> <p>7. Seen during first week or ten days, etc. (field 12, Fig. 1, 2, 3, 4, 5).</p> <p>8. Seen during first week or ten days, etc.</p> <p>9. Seen during first week or ten days, etc.</p> <p>10. Seen during first week or ten days, etc.</p> <p>11. Phagocytosis.</p>

SEVERAL HOURS AFTER THE PAROXYSM.

Tertian.	Quartan.	Estivo-Autumnal.
<p>1. The organisms which were seen during decline of the paroxysm within the red cells have increased in size and contain a few reddish brown pigment granules, which dance actively under the eye (field 4, Fig. 3). The extracellular bodies seen in decline of paroxysm somewhat larger in size.</p> <p>2. Corpuscle somewhat larger and decolorized. (Parasite always grows at expense of the corpuscle.)</p> <p>3. Pigment granules extremely active and breaking into fragments. Organism very active.</p> <p>4. Organism hyalin in color.</p> <p>5. Extracellular bodies may give rise to flagellæ.</p> <p>6. Phagocytosis.</p>	<p>1. Organisms slower in growth and are not so large as in tertian type; ameboid movement not so active; rods and clumps of pigment are larger and darker in color than tertian.</p> <p>2. As the parasite grows and the pigment increases in quantity, the red corpuscle does not become decolorized as it does in the tertian variety, but the affected corpuscle may be little smaller and darker in color than its unaffected neighbor (field 8, Figs. 1, 2, 3, 4).</p> <p>3. Pigment granules less active, darker in color, and in larger clumps than in tertian type. Organism slow in action.</p> <p>4. Organism more refractive than tertian.</p> <p>5. Flagellæ.</p> <p>6. Phagocytosis.</p>	<p>1. Organisms somewhat smaller in size than other varieties. Fever often continuous.</p> <p>2. Color of corpuscle often shrunken or crenated and darker in color.</p> <p>3. Pigment granules not as numerous and active as tertian variety, and are finer and not so dark as quartan.</p> <p>4. Parasite hyalin in color.</p> <p>5. Flagellate bodies.</p> <p>6. Phagocytosis.</p>

DAY BETWEEN THE PAROXYSMS.

Tertian.	Quartan.	Estivo-Autumnal.
<p>1. The small hyalin bodies seen in the first stage (during paroxysm and decline of paroxysm) will be found to have grown until they half fill the red corpuscle.</p> <p>2. Corpuscle larger than normal and decolorized.</p>	<p>1. The organisms seen in first stages of their growth (during paroxysm and decline of paroxysm) are of slower growth and smaller than tertian type.</p> <p>2. Corpuscle, instead of being expanded and decolorized, appears smaller than normal, darker—often having a greenish, brassy appearance.</p>	<p>1. Several groups of organisms often present at same time, giving rise to continuous fever, with daily paroxysms; and we will then see these organisms in the different stages of their growth. The fever is apt to be persistent. Tertian intermittent paroxysms (three per cent.) may occur by infection of this variety of parasite.</p> <p>2. Color of corpuscles brassy and crenated if infected by larger forms of parasites; pigment granules lie near the periphery in the larger forms, and we may see ring-shaped bodies, which are the smallest size observed. At end of first week or ten days, if no quinin has been taken, we will see ovoids, crescents, etc. (field 12, Figs. 3, 4, 5).</p>

DAY BETWEEN THE PAROXYSMS.—Continued.

Tertian.	Quartan.	Estivo-Autumnal.
<p>3. The organisms are still actively ameboid and the number of reddish brown pigment granules has considerably increased.</p> <p>4. Pigment granules reddish brown and very active.</p>	<p>3. Index of refraction greater than tertian type, ameboid movement slower in action, and the pigment granules, instead of being reddish brown, are larger and darker in color than tertian.</p> <p>4. Pigment granules darker in color, occur in larger clumps, and not so active as tertian.</p>	<p>3. Parasites hyalin in color.</p> <p>4. Pigment granules smaller and fewer in number than other varieties, and the movement of the pigment is very slow.</p>

AFTER FIRST WEEK OR TEN DAYS, OR AFTER TREATMENT WITH QUININ HAS BEGUN.

Tertian.	Estivo-Autumnal.
<p>1. The small hyalin bodies quickly disappear after quinin has been given.</p> <p>2. No round bodies, ovoids, or crescents can be seen. Here are shown poikilocytes observed by author in hemaglobinuria and other varieties of malarial fevers (field 4).</p>	<p>1. The small hyalin bodies have disappeared. Generally all forms of organisms are gone.</p> <p>2. Certain characteristics and easily-recognized forms may be seen, however, which are only seen in this type of fever, (field 12). These are round or ovoid bodies about the size of a red corpuscle (slightly smaller or larger), with clear, rather highly refractive, waxy-looking protoplasm, and coarse, dark, pigment granules, which are usually collected in rods forming a ring or mass in the center of the organism. The coarse granules may be slightly motile if separated. In association with these are seen crescentic bodies, the protoplasm of which shows the same characteristics as that in the ovoid forms, while the pigment is collected in the middle in a ring or bunch, and which are only slightly motile. Sometimes the crescentic or ovoid body may be in the middle of the cell. More often the remains of the corpuscle are attached to the concave body of the crescent, while in some cases no remains of the cell can be found. Ovoid bodies have been seen to change into crescents, and crescents into ovoids. Segmentation has never been observed in ovoids or crescents.</p> <p>3. Ovoids may undergo a gemmation (budding) process.</p> <p>4. Crescents may be vacuolated.</p> <p>5. When the round bodies occur, flagellæ may be developed from them, and the pigment is very active.</p> <p>6. All these forms of estivo-autumnal type are the ones usually found in cases of pernicious malarial fever, chronic malarial cachexia, remittent malarial fever, malarial hemaglobinuria, and obstinate cases of malarial fevers in general.</p>
Quartan.	
<p>1. Same as tertian.</p>	

two sets of organisms become mature on successive days, and quotidian fever will occur. This happens in thirty per cent. of the cases of tertian infection. Should there be a double infection of the tertian parasite, one may change the quotidian type of fever into a tertian by giving a moderate dose of quinin before or early in the paroxysm. This is made possible by the fact that an entire group of organisms may be killed at the time of their segmentation, while a half grown set of parasites will continue in its course of development.

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The Treatment of Infectious Nephritis by Tincture of Cantharides.—MYSZYNSKA (*Revue de Therapeutique*, January 1, 1896,) concludes from a number of observations that the tincture of cantharides is very useful in the treatment of acute epithelial nephritis either with or without edema, especially in young persons at the beginning of the disease. Under these conditions it is a remarkable diuretic, and decreases the amount of albuminuria even if the

patient is not placed upon a milk diet. It also improves the appetite and the feelings of the patient. The dose is from 9 to 12 drops. It is contraindicated in interstitial nephritis occurring in alcoholic individuals and in those whose arteries are sclerosed.

Nocturnal Cough Accompanied by Vomiting in Infants.—

GASTOU (*La Médecine*, December 26, 1896,) has seen a number of cases of spasmodic cough occurring in young infants in the night time and giving rise to vomiting. Auscultation gave no clue to its origin. Such a cough has often been attributed to a reflex, set up by the intestinal tract, or by some other cause, while a more thorough examination would have shown it to be due to a posterior coryza. It possesses the following characteristics: It is spasmodic, like the whooping-cough associated with vomiting, and occurs at night—almost never in the day. It is seen in young infants who neither blow their nose nor spit. The result is evident. The secretions from the nose, when the infant is lying on its back, drain into the pharyngeal and arytenoid regions and provoke a spasmodic and strangling cough. The treatment is simple. A bit of absorbent cotton is drawn to a point and smeared with borated vaseline and inserted deep into each nostril. The infant sneezes and snuffs and the vaseline penetrates the nasal cavities as far back as the pharynx. If desired, astringent substances, especially antipyrin, may be mixed with the vaseline. This treatment should be carried out three or four times a day.

PLEURISY; ITS DIAGNOSIS AND TREATMENT.¹

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ALTHOUGH pleurisy is of such common occurrence, especially at certain seasons of the year, and the diagnosis, as well as treatment, is regarded usually as a matter of course, I respectfully call attention to the subject this evening in the hope that a full discussion may elucidate any points that may be exceptional to the general rule. In order to do this properly, however, it may be necessary to go over a certain amount of well-known ground.

Let us look, in the first place, at the classification and varieties of pleurisy. The disease in question may be properly defined as inflammation of the pleura, and of two classes: (1) Pleurisy *without* effusion, also called dry pleurisy, circumscribed pleurisy; and (2) pleurisy *with* effusion.

Each of these classes may be one of three varieties: (1) Acute, (2) subacute, and (3) chronic.

Of dry pleurisy, or pleurisy without effusion, little need be said. It is usually secondary, and in that case is located at the seat of the primary trouble, be it a fractured rib or other surgical injury, or inflammation that has extended to the pleura from the lungs, for instance, as in the course of phthisis. It may, however, be primary or idiopathic, and then, for some reason not clearly known, is situated near one nipple or the other, but more frequently the left. The physical signs are few. On inspection, if there be much pain, we observe a "catch in the breath." Palpation and percussion both yield negative results. Finally, on auscultation, the respiratory murmur is only changed in rhythm, the vocal resonance is unaffected, and as for adventitious sounds, a slight crepitation at most is all that may be expected, and even that is not always present. Such physical signs are what might be expected if we consider the pathological condition. The subserous basement membrane may be thickened at some spot, owing to proliferation of the connective tissue corpuscles, or else, with or without such small spot of thickening, there may be on the serous surface a small amount of fibrinous exudation without serum. This would give the crepitation on auscultation. It would not infrequently terminate in a point of adhesion—a condition often observed on *post-mortem* examination in cases of death from various causes, showing that the patient may have had dry pleurisy during life without even having been aware of that fact.

The *diagnosis* of dry pleurisy is readily made, as a rule. The two affections with which it is most likely to be confounded are pleurodynia and intercostal neuralgia.

Pleurodynia, or muscular rheumatism of the side of the chest (called lumbago, in the back), presents for examination a somewhat diffused area of tender muscles in the side, very painful on pressure or the slightest movement. Lumbago is frequently present or alternates. The rheumatism changes also from one set of muscles to another. In the intercostal neuralgia, the pain follows the line of the affected nerve, and is especially painful where the latter leaves the spinal column, in the middle of its course, and at its anterior extremity, for the reason that the nerve is more superficial at these three points, and consequently more tender on pressure. The pain in dry pleurisy, on the contrary, is limited to one spot that may be covered with the point of one finger, and is not increased by pressure or motion except that of respiration.

Let us now examine the other class of pleurisy, or pleurisy with effusion. The effusion is a sero-fibrinous exudation. The more acute the disease, the more fibrin will there be in proportion to the amount of serum. And, on the contrary, as the disease is chronic, so is the serum greater in amount proportionally to the fibrin. There are three varieties of pleurisy with sero-fibrinous effusion: (1) Acute, (2) subacute, and (3) chronic.

Chronic pleurisy with effusion has usually been classed by authors with empyema or pyothorax, also called suppurative pleurisy, all other varieties being termed acute or subacute. To the author there seems to be no good reason for such an arrangement. It appears to be a much better plan to speak of acute, subacute, and chronic pleurisy with sero-fibrinous effusion, and of empyema or pyothorax under a separate head. Acute and subacute pleurisy with effusion may be considered as of the same nature—that is to say, originating in the same way, as exposure to cold, pleurisy *a frigore*, as it is called, rheumatic pleurisy, and so on.

Chronic pleurisy with effusion, according to my experience, has generally been of tubercular or cancerous origin. Landouzy of Paris, as long ago as 1887, claimed that *all* cases of pleurisy with effusion, however acute, were of tubercular origin, and that there was, in fact, no such disease as pleurisy *a frigore*. While this may be true for the climate of Paris, it is certainly not the case in such cities as London and New York, as amply verified by inquiry on this subject at the Brompton Hospital in London and statements of pathologists in New York.

The truth is that acute and subacute pleurisy in

¹ Read before the New York County Medical Society, January 25, 1897.

this climate may be not infrequently considered as cases of pleurisy *a frigore*, the difference arising from the condition of the patient at the time of attack. Or sometimes, from improper hygienic surroundings and conditions, and lack of care in general, an acute attack may become subacute. More rarely by far may an acute pleurisy with effusion become chronic. The rule is that chronic pleurisy with sero-fibrinous effusion is a chronic disease when first observed, and usually is of tuberculous origin, sometimes cancerous. According to the late Dr. Bowditch of Boston, the pleurisy is of cancerous origin if the effusion into the pleural sac is bloody, as evidenced by aspiration. My experience in this direction leads me to believe that the statement is generally correct. Of course those cases are exceptional when, through accident or carelessness, an intercostal artery is punctured, or the opposing pleura and lung are wounded and injured sufficiently to give rise to an appreciable amount of hemorrhage.

The physical signs of pleurisy with effusion are well known. Suffice it to say that the fluid collected in the pleural sac displaces the lung and acts as a diaphragm or partition to intercept sound, so that over the site of the fluid the vocal fremitus is diminished or absent; so is the respiratory murmur and vocal resonance. Exceptionally, a string of adhesion or rib may telephone or transmit such sounds to some spot with corresponding bronchial breathing and the like. Palpation in this disease is of the greatest importance. The diminution or absence of fremitus, even though bronchial breathing be present, is significant. In cases of doubt, however, the aspirating needle may be tried. The physical signs of acute pleurisy in this first stage are of little import, except the "catch in the breath" observed on inspection and the friction sound heard on auscultation. This friction sound disappears when the effusion takes place in amount sufficient to keep the two pleural layers apart. But in the third stage, after the absorption of fluid has proceeded far enough to allow the two layers to come in contact again, the friction sound returns, or is *frictio redux*. The physical signs of thickened pleura are generally the same as those of pleurisy with effusion, except to a less marked degree.

The diagnosis of pleurisy with effusion is usually regarded as very easy to make. That is quite true. But there are some exceptions to which I wish to call your attention. Thus, in a case observed at Bellevue Hospital some years ago, there were all the signs of pleurisy with effusion. There was diminished respiratory expansion on the affected side, absence of fremitus on palpation, marked dullness on percussion, if not flatness, and absence of respiratory murmur.

The vocal resonance was also diminished or absent. The case was regarded as one of pleurisy with effusion until *post mortem* examination revealed occlusion of the left primitive bronchus, due to presence of an unobserved aneurism. There was complete obstruction to convection of sound in the left bronchus, thus cutting off the respiratory murmur, fremitus, and the like, giving the same result, but in a different way, as in pleurisy. Meantime the whole left lung became filled with a mucoid fluid, giving rise to the marked dullness on percussion. Walshe mentions a case where enlargement of the heart has been mistaken for pleurisy with effusion.

Enlarged liver or spleen may sometimes be readily mistaken for pleurisy with effusion, but the well-known differential physical signs are generally sufficient for a diagnosis without the aid of the aspirating needle. Sometimes, however, the spleen enlarges upwards instead of downwards, as Niemeyer very properly observes. In some of these cases the needle has to be used to make the diagnosis, as was perfectly illustrated in the case of a young man whom I took for advice to the late Drs. Leaming and Hudson.

In differentiating pleurisy from solidified lung tissue, a subject that presents difficulties in some cases, the curved line of Ellis has been regarded by some as of much importance. That is to say, that the upper surface of the fluid in the pleural sac is not a level, as is the case with fluids in general, but higher at some points than others, and presenting a line of dullness just the reverse of the direction of the interlobar fissure. I must confess that I have never found this curved line of Ellis to be, of itself, of any practical value in making a diagnosis—even admitting that it exists, nor have I ever heard it satisfactorily explained.

The prognosis of the disease depends greatly upon whether it is the ordinary acute primary pleurisy, or whether it is secondary to some other disease. In the first case, the prognosis may be said to be very favorable under proper management. The rule is recovery in two or three weeks after the attack commences. When secondary, it depends, of course, on the primary condition, of which the pleurisy is only a symptom or complication.

The treatment of acute pleurisy with sero-fibrinous effusion is generally directed first to the pain in the side. How are we to afford relief? Perhaps the simplest way would be to administer an opiate; in fact, if the pain is very severe, this will have to be done. The hypodermic injection of a moderate dose of morphin, to be repeated, if necessary, at proper intervals for the first day or two, may be all that is necessary, since it is only during the first few days that pain is an urgent symptom. In many cases

morphin is not required. Dry cups have been highly recommended, but in my experience they are of little service and cause much annoyance to the patient. In case opium is not required, or even in conjunction with it, the question lies between hot and cold applications. Of these, I do not hesitate to recommend the hot-water bag in preference to ice. It affords greater and more speedy relief than ice, and to the patient is much more comfortable. Hot applications, with or without opium, therefore appear to be the best remedies for the pain in the side.

The temperature in pleurisy rarely goes so high as to require interference, but should it be thought advisable to reduce it, a moderate dose of acetanilid or ammonol—say three grains—can be given at noon and repeated at intervals of three hours until bedtime. This is a much better plan than administering quinin, unless a positive malarial condition is present, for, with the exception of controlling temperature in malarial affections, quinin is of little or no benefit, and often does harm by increasing head symptoms, such as delirium, insomnia, deafness, and the like.

Remedies to control the pulse can be given in pleurisy with far less danger of fatally depressing the heart than in pneumonia. For that reason, *veratrum viride*, *aconite*, and similar medicines can be used not infrequently with great advantage, whereas in nearly all cases of croupous pneumonia they are, in my opinion, out of the question.

As a rule, in ordinary favorable cases of acute pleurisy with effusion, stimulants are not needed, but the physician would be guided in this as in other diseases, by the character of the pulse, the patient's general condition and previous habits. In ordinary cases, when stimulants are called for, as evidenced by the dry, brown tongue especially, a tablespoonful of whisky or brandy in a little milk every three hours is sufficient; but among those addicted to intemperance a much larger quantity has to be administered. Digitalis, which is so highly recommended and often urgently needed in pneumonia, is seldom required in pleurisy, and the same may be said of nitroglycerin, carbonate of ammonia, and other so-called heart stimulants, the alcohol alone usually being quite sufficient.

Even to this day it is a common practice with the profession at large to apply blisters both in pneumonia and pleurisy. I cannot help disapproving of such practice, however common it may be, in the acute stages of these diseases. In acute pleurisy, blisters would not only do no good during the first two weeks, say, but would do positive harm by interfering with the patient's comfort, and also by in-

creasing the rise of temperature. Should the case become tedious and the effusion remain stationary after the third week in spite of ordinary treatment, then blisters and other counter-irritations, as by means of the tincture of iodine, compound iodine ointment, and the like might be tried, though even here aspiration would be better.

To cause the absorption of the effused liquid in the pleural sac in acute cases, the best remedy I have ever tried is sodium salicylate. It may be given early in the disease, and in the same doses as in acute articular rheumatism. In fact, if we regard the pleural cavity as a large joint, there is no reason why it should not be subject to rheumatic inflammation and effusion, as the knee, for example, in acute rheumatic fever, and in some of these cases the sodium salicylate does certainly act speedily and effectually. On the other hand, I have observed but little benefit derived from the administration of iodide of potassium or such diuretics as acetate of potash with infusion of digitalis, diuretin, and so on. Such remedies do more harm by interfering with digestion and nutrition than any benefit to be derived from their use. But the sodium salicylate should be given with proper precaution. In some cases it so depresses the heart and causes such vertigo that its further use has to be discontinued at once. Also, if such symptoms do not arise so as to contraindicate its further use, it may just as well be discontinued after a few days or a week if such trial proves its action to be of no benefit.

An all-important question arises in the treatment of pleurisy with effusion: Shall we aspirate, and if so, at what stage of the disease, and at what point shall the needle be inserted?

In order to discuss this question properly, let us refer again to the three stages of acute pleurisy with effusion: (1) The dry stage, lasting only a few hours; (2) the stage of effusion, lasting usually from five to eight days; and (3) the stage of absorption, the whole duration being two or three weeks.

Of course, it is generally agreed that if the fluid has accumulated rapidly, as sometimes happens, and is excessive in amount, aspiration should be resorted to at once. Not only is life endangered by asphyxia from interfering with respiration, but if the heart be much compressed, as evidenced by its wide displacement and feeble and irregular beats, the patient may die very suddenly from heart failure. Under such conditions, aspiration alone can save life, and it should not be delayed.

Generally about half the fluid is withdrawn. That is usually sufficient to relieve the urgent distress. Moreover, the cough and pain in the chest caused by the expanding lung will now interfere greatly

with further withdrawal of fluid, not to mention the danger of rupture of the lung. In a few days the fluid may have returned, and a second or even a third aspiration may become absolutely necessary. After this, in favorable cases, the exudation of fluid ceases, and what is left in the pleural cavity becomes rapidly absorbed, with complete recovery. But unless such urgent symptoms do present themselves—in other words, if the patient be doing well, are we to withdraw the fluid during the acute stage? Certainly not. The reason for it is obvious. There is a great tendency to the formation of adhesions in pleurisy under the best conditions. To draw off this fluid during the active stage of inflammation, as evidenced in part by the pain and temperature, would simply bring the inflamed surfaces together that had heretofore been kept apart by the effusion. Increased irritation with a more severe grade of inflammation would follow, and, extending into the subserous connective tissue, would convert a superficial into an interstitial exudation and result in a thickened pleura, if not extensive plastic adhesions. Such a termination would be extremely unfortunate, and due to unnecessary if not meddlesome interference. Both lungs would be damaged, the one from imperfect expansion due to such thickening of the pleura and extensive adhesions; that hill-climbing or the use of the pneumatic cabinet would fail to break them up; the other from vicarious emphysema, in its effort to do compensatory work. It is to avoid these injuries to the pleura, with consequent permanent injury to the organs of respiration, that Potain and other eminent authors so earnestly recommend that, in ordinarily favorable cases, the operation be not resorted to before the second or third week, when all signs of active inflammation have subsided.

It has been recommended that the early withdrawal of the fluid might be practised while injecting sterilized air, thus converting acute pleurisy with effusion into acute pneumothorax; in other words, to substitute sterilized air for fluid as the medium for keeping the two serous inflamed layers apart. The air would become more rapidly and certainly absorbed, while, at the same time, remaining long enough to prevent the injury that would otherwise result from the immediate contact of the inflamed surfaces and sudden expansion of the lung. But, as yet, I have never learned that any practical result for good has been reached by such means. There is no danger whatever, in my opinion, that a sero-fibrinous effusion will be converted into a purulent one by the operation of aspiration if proper precautions, now so well-known to the profession, are observed. But if drawing off the fluid is not good practice, allowing it to remain too long may be said to be equally bad.

In this case the period of active inflammation is over, the stage of organizing has arrived, and if the lung be allowed to remain compressed and quiescent, adhesions are almost certain to result.

It is difficult, however, to lay down precise rules for thoracentesis, but Anstie's summary of indications is as good as any, and very convenient. He recommends the operation:

1. In those cases where the fluid fills one pleural cavity and begins to compress the heart and other lung.
2. In all double pleurisy where the total fluid would about fill one pleural cavity.
3. In cases of even a moderate amount of effusion, but attended with paroxysms of orthopnea.
4. In all cases where the fluid is purulent.
5. In those cases where the fluid, occupying at least half of a pleural cavity, has existed for several weeks, and shows no signs of being absorbed.

Though thoracentesis was performed by Troussau of Paris as early as 1830 for evacuating pus from the pleural cavity, to Bowditch of Boston is due the honor (in 1857) of first advocating aspiration in cases of sero-fibrinous effusion. In performing the operation, he preferred the scapular line (Bowditch's line) at a point two inches above the line of the lower border of the healthy lung. One objection to this locality is the accidental plugging of the needle with particles of inflammatory exudation that have settled down at this most dependent point, so that I have been compelled to withdraw the needle and clean it out several times during an operation. For this reason I prefer the axillary line and the fourth interspace on the right side, and the fifth on the left.

In the case of pus in the pleural cavity, a sufficiently large opening should be carefully made at the most dependent point to insure proper drainage; but in case of sero-fibrinous effusion, there is no reason why we should select such a low point, since a sufficient quantity of the fluid may be withdrawn by going higher up. We also avoid the danger of puncturing the diaphragm and going into the abdominal cavity, thereby causing fatal peritonitis. Such an accident could never happen if the operator would only bear in mind the lowest points of attachment of the costal pleural membrane to the chest walls, for they are much higher up than are generally supposed. To avoid unnecessary depth of penetration by the needle and wounding the lung, I invariably use a shield. As soon as the point of the needle is free, showing that fluid has been reached, the shield or guard is slipped down against the chest wall and firmly secured by means of a screw. It is difficult to say just how much fluid is to be withdrawn, but in general about one-half. The operation should cease immediately if

there be signs of collapse, as evidenced by feeble pulse, pain across the sternum, and the like.

I have laid a good deal of stress on this subject of thoracentesis, or aspiration, in cases of pleuritic effusion, but no more, in my opinion, than it deserves. The operation itself is so easily performed that it may be almost regarded as insignificant. And yet Potain and other eminent authors of large experience regard it as always to be considered a serious procedure, which should invariably be performed under the necessary precautions. In view of these facts it is difficult to see what grounds there are for much difference of opinion, yet we sometimes find it recommended to draw off all the fluid as soon as the diagnosis is made, while others contend that it is wrong to aspirate before the third week. At present, however, it seems to be customary to perform the operation much earlier than was formerly taught.

In the case of children, the operation is rarely necessary, as the fluid is nearly always absorbed.

Dieulafoix's aspirator is the best instrument to be used, but it costs so much that Potain's aspirator with a bottle attachment is preferred by many. This, however, costs more than there is any necessity for, and, in addition, causes a great deal of continuous pumping to render the bottle a sufficient vacuum for withdrawal of the fluid. For such reasons Potain's fine trocar and canula, with rubber tube attached, simply a siphon, is recommended as one of the best.

For after-treatment, the patient should be sent to a rolling country, where moderate out-door exercise, in addition to hill climbing, will insure full expansion of the crippled lung, thus still farther preventing adhesions, or breaking up those that may have formed. By such means I have known absolute recovery after a very severe attack. The next best plan to hill climbing undoubtedly is the expert use of the pneumatic cabinet. The pulmonary gymnastics afforded by this instrument can hardly be over-estimated. What has been said in regard to acute pleurisy with effusion, applies, with modifications, to the subacute variety. Little or no benefit, however, need be expected in these cases from the use of sodium salicylate; in fact it is generally contra-indicated on account of its depressing influence.

In regard to chronic pleurisy with effusion, the primary disease, of which it is but symptomatic, should be treated. Of these primary diseases, tuberculosis is by far the most frequent.

[For discussion see page 321]

Ohio State Medical Society.—The fifty-second annual convention of this Society will be held in Cleveland, May 19, 20, 21, 1897. The secretary is Thomas Hubbard, M.D., 205 Ontario street, Toledo.

THE AMBULATORY TREATMENT OF FRACTURES OF THE LEG.¹

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AFTER the discussion in 1894 in Berlin² of the ambulatory treatment of fractures of the lower extremity, a considerable interest in the subject was aroused, and although nothing really new or novel was offered, still it has caused a somewhat more extended use of this method of treatment. The ambulatory treatment of leg-fractures seems to be regarded by some as new, and by others as merely the adoption of views that first found expression some thirty years ago. The method of which I speak in this paper is in use in the Roosevelt Hospital fracture service and, at the time of its introduction by Dr. John McG. Woodbury, was new as regards certain principles, namely, the time when the patient was instructed to walk on the injured limb, and the locomotion of the patient without the aid of crutches; and in speaking of the ambulatory treatment of fractures, I have reference particularly to the large number of cases in the Roosevelt fracture service treated by us where the patient was allowed and encouraged to walk at once, without crutches or supporting braces other than the protective splint directly applied to the injured member.

The splint used in these cases is the plaster cast, so applied as to extend from the toe-tips up to and around the tuberosity of the tibia, so that in walking the greater portion of the weight of the body is supported by the circumference of the upper part of the cast. After reduction of any existing deformity, the limb being held in the proper position, the splint is applied as follows: Beginning at the toe-tips and extending to the knee-joint, the limb is firmly and smoothly bandaged with an ordinary muslin roller. Over this is applied the plaster of Paris cast. No padding with cotton is made use of, the object being to have the splint exert equal pressure at every point, and so provide absolute fixation. In many cases, as soon as the plaster is perfectly hard, the patient may walk, and walk without any other supporting apparatus. As a rule, however, he is instructed to keep his leg in the horizontal position for twenty-four hours, and if at the end of this time the splint is comfortable and there is no tendency of the toes to swell, he is allowed to walk.

In the treatment of any fracture, there are certain

¹ Read before the Section on General Surgery, New York Academy of Medicine, January 11, 1897.

² Verhandlungen der Deutschen Gesellschaft für Chirurgie, xxiil Kongress, 1894.

important indications to be borne in mind. The surgeon must (1) reduce the deformity; (2) maintain such reduction; (3) fix the fragments and protect the limb, and (4) attend to the general condition of the patient. The last consideration is of especial importance, and I cannot emphasize too strongly the desirability of keeping our fracture cases out of bed. It applies equally well to children, to adults, and to old men and women. I may cite here the case of a man, seventy-two years of age, suffering from a Pott's fracture, who was up and about on the eighth day after the receipt of the injury, and able to walk without the aid of crutches or cane. These statements apply to all fractures, including even compound fractures when observation of a few days has shown us that no infection exists. In the ambulatory treatment of fractures the general condition of the patient is better maintained, less atrophy of the injured limb takes place, and the stiffness of joints in the neighborhood of the fracture is much less pronounced than in those cases which are confined during convalescence. The questions to be decided in considering the advisability of this method of treatment relate to the selection of cases, the form of apparatus to be used, the time when the patient is first permitted to walk on the splint, the duration of treatment, and the advantages gained and risks incurred.

The Selection of Cases for this form of Treatment.—I have never seen a fracture of the leg which at some time during the healing process was not suitable for the ambulatory splint. There are many cases where the accompanying edema is excessive, and others where there is a considerable effusion of blood. In these cases the surgeon should apply equable pressure throughout, fix the fragments, raise the leg, and keep the patient in a recumbent position until the effusion is absorbed and the swelling disappears. The walking cast is then to be applied, and the patient is allowed to be up and about. It is a great advantage to apply the plaster cast immediately after the receipt of the injury, and thus by the firm, even pressure which it exerts to prevent edema or effusion from occurring. I have never met with an instance of a fracture of the leg in which an immediate application of the plaster cast was followed by bad results. In compound fractures the limb should be made thoroughly aseptic, an aseptic dressing applied, and the fragments fixed. If infection does not occur the ambulatory splint is applied later, and the patient then may begin to walk. When there is an extensive injury to soft parts, the patient must be kept in the recumbent position, with the leg elevated, but in these cases the ambulatory splint should be applied as soon as the condition of the leg warrants it.

The Best Form of Splint for the Ambulatory Treat-

ment of Leg-fractures.—The plaster cast is the only one that has been used in the Roosevelt Hospital fracture service, and the only one, in my opinion, that will make the treatment successful. The ordinary cast varies in thickness from one-eighth to one-quarter of an inch, being thickest about the ankle and at the upper circumference where it grasps the head of the tibia. The plaster of Paris used must be of the best quality. At Roosevelt Hospital use is made of two kinds of plaster bandages, one being the ordinary gauze roller impregnated with plaster of Paris, the other a stiff starch bandage similarly impregnated. A layer of the common plaster bandage is first applied, and this is followed by a layer of the starch-plaster bandage; over this is built the cast with the common plaster of Paris bandages. By thoroughly incorporating these bandages into one mass a cast is made which is fairly light and yet possesses some elasticity, due to the starchy element, and so, while it affords absolute fixation, it is very unlikely to crack or break when the patient walks.

The Time when the Patient Should be Encouraged to Walk with the Splint.—In an uncomplicated case, when an immediate application of the cast has been made, before the occurrence of edema, the patient is usually allowed to rest for twenty-four or forty-eight hours, and then if the toes are not swollen, and the splint is comfortable, he begins to walk. At first his gait will be awkward; he may be nervous and afraid to trust his weight on the plaster cast; but with a cane he will soon learn to balance himself, and in a short time he will require no support except that afforded by the splint.

The Duration of the Treatment.—As regards solid bony unions I am of the opinion that in the great majority of cases no time is gained by this method of treatment. The after-treatment is considerably shortened, however, as the remaining stiffness is less and is more easily relieved. The average length of time the splint has been worn is from twenty-eight to thirty-five days. In a few cases it has been worn for six weeks, the time depending on the amount of callus thrown out, and the completion of consolidation. After the removal of the splint, the leg is doused alternately with hot and cold water several times a day, in conjunction with massage, until all stiffness has disappeared.

Advantages of the Ambulant Method.—I have already mentioned some of the advantages of this form of treatment. Briefly, they consist in the fact that the patient is kept up and about, less muscular atrophy occurs, there is less stiffness of adjacent joints, the period of after-treatment is considerably shortened, and the general health of the patient is maintained. It must also be remembered that the chances of hy-

poststatic pneumonia, occurring in elderly patients, are much less if we keep them active. Quite a number of fractures of the leg have been treated in people addicted to the constant use of alcohol, and I have never seen a case of delirium tremens occur when the ambulant splint was used from the first.

Risks Incurred.—The chief risk is incurred during the application of the cast. To properly apply a cast of this kind requires a skilled operator and a skilled assistant. The importance of skilled assistance and intelligent coöperation is just as great to the surgeon in the reduction of the deformities attendant upon fractures, as it is in the reduction of any other bone or joint deformity. The position of the limb, and skill in holding it during the application of the cast, are most important factors in connection with the success of this procedure. In oblique fractures the splint must be worn until the callus has been absorbed and the fragments have united firmly, so that there is no possibility of the upper fragment becoming displaced later on by the weight of the body.

The accompanying statistical table shows the cases subjected to this method of treatment, from the spring of 1888 to September 15, 1896, in the Roosevelt Hospital fracture service, under the supervision of Dr. Frank Hartley and Dr. John M. Woodbury, in the Post-Graduate Hospital service under the charge of Dr. John M. Woodbury, and in the private practice of the writer.

ing deformity is usually corrected easily by flexing the foot to a right angle and making extreme inversion. This position must be maintained until the splint has been applied and the plaster has set. Of the 56 cases of Pott's fracture, the ambulatory splint was applied in 38 instances during the first twenty-four hours; in 18 cases the cast was applied from three to twenty-one days after receipt of the injury.

Fractures of the fibula are of very frequent occurrence. A fracture of the shaft frequently shows little or no displacement, and, as a rule, simply requires the application of the plaster cast. Fractures of the lower end of the fibula frequently show some deformity, and may be accompanied by inward or outward displacement of the foot. A fracture of the lower end of the fibula, accompanied by some outward displacement, but where the internal malleolus is intact, should be regarded as an incomplete Pott's fracture, and calls for the same treatment. Fractures of the lower end of the fibula, with some inward displacement, calls for some eversion as well as flexion to a right angle before application of the plaster cast. Out of 110 fractures of the fibula, 101 were of the external malleolus or at the lower third. In 81 cases, the ambulatory splint was used from the first. In the remaining cases of this group, this treatment was inaugurated from two to twenty-three days from the time of injury, the cases including one compound

TABLE SHOWING THE DAY OF APPLICATION OF THE PLASTER CAST.—CASES TREATED FROM THE SPRING OF 1888, TO SEPTEMBER 15, 1896.

Pott's Fractures.		Fibula.						Tibia.				Tibia and Fibula.		Osteoclasis.	Non-union.		Trendelenburg-Hartley	
		Lower 3d.		Mid. 3d.		Upper 3d.		Lower 3d.		Mid. 3d.								
Cases	Day	Cases	Day	Cases	Day	Cases	Day	Cases	Day	Cases	Day	Cases	Day	Cases	Cases	Time.	Cases	Day
38	1	77	1	5	1	1	6	7	1	9	1	6	1	24	1	4th wk	2	14
1	3	3	2	1	2	1	7	1	5	1 ¹	5	1	6	..	2	5th "	..	..
2	4	5	3	1 ¹	14	..	..	1	10	1	7	2	7	..	1 ²	6th "	..	..
1	5	2	4	..	..	..	..	..	..	1	10	1	9	..	2	7th "	..	..
1	6	4	5	..	..	..	..	..	..	1	11	2	12	..	1	8th "	..	..
6	7	4	7	..	..	..	..	..	..	..	..	2	14	..	1	9th "	..	..
1	8	2	8	..	..	..	..	..	..	..	..	..	..	..	1	10th "	..	..
1	11	3	14	..	..	..	..	..	..	..	..	..	..	..	1	11th "	..	..
3	14	1	23	..	..	..	..	..	..	..	..	..	..	..	1 ²	11thm'h	..	..
2	21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.....	..	..
56	—	101	—	7	—	2	—	9	—	13	—	14	—	24	11	—	2	—

¹ Compound.

^{*} Had been compound.

Taking these seven groups of fractures in the order as shown in the table, Pott's fracture will be considered first. In many cases the deformity is so extreme and typical that a diagnosis is made at sight. In other cases, there is no outward displacement, and very little swelling, and a correct diagnosis is arrived at only after a painstaking examination. The exist-

fracture at the middle third of the bone where the walking splint was applied on the fourteenth day.

Fractures of the tibia are more serious, indicating as they do the receipt of greater violence, and may be accompanied by a considerable degree of shock. Many of the simple fractures do not show much dis-

placement, and, as a rule, are readily put up in a correct position by having a good deal of extension made in the direction of the limb during the application of the cast. In the 22 fractures of the tibia, 9 occurred at the lower third, and 13 at the middle third. Sixteen were treated from the first by this method, and 6 from five to eleven days after receipt of the injury, including one compound fracture on the fifth day.

Fractures of the tibia and fibula require the greatest care in putting them up properly. The surgeon must bear in mind the tendency toward a posterior sagging of the fragments during the application of the cast, and considerable extension must be maintained while this is being done. Of the 14 cases of fracture of both bones, 6 were treated from the first by this method, and 8 from the sixth to the fourteenth day. In fractures of the middle third of both bones, when there is a tendency toward displacement of the fragments, the splint should include the knee-joint and extend well up on the thigh. On the tenth day the bones will be pretty firmly glued together, callus will have been thrown out, and ossification will be under way. The splint is then removed, and if the limb is in good order, the ambulant splint is applied, up to the head of the tibia.

The osteoclasia cases, 24 in number, are here considered because many of them have been most perfect examples of the ambulatory treatment of fractures of both bones about the middle third. They also show the value of the immediate application of the plaster cast, applied as it was without padding, and controlling or preventing the occurrence of edema and effusion. It has been a common sight after the first week to see these little children stand and attempt to walk, and after the first week I always encourage them to do so.

The cases of non-union following fracture, 11 in number, which are presented, were of no little interest, as several of the patients had been confined to bed for a considerable period. Not one case of fracture treated by the ambulatory method ended in this unfortunate way. The ambulant splint was applied to these cases, and the patients were encouraged to walk; if union did not occur within a reasonable time, the fragments were thoroughly needled. This method has been very successful.

Two cases of the Trendelenburg-Hartley operation are here considered, as they show the value of the ambulatory splint in compound fractures. On the tenth day, as a rule, the dressing was removed, the stitches taken out, and a new cast applied, and frequently by the fourteenth day the patient was able to walk very well. This is a very good showing when we bear in mind that a good sized wedge had been

removed from the tibia and a linear osteotomy performed on the fibula.

In 226 fractures of the leg, the ambulatory cast was applied during the first twenty-four hours in 159 cases, about seventy per cent. of the total number.

In a letter which I have just received from Dr. Frank Hartley, he says: "I believe thoroughly in the ambulatory treatment of fractures, when we exclude from such cases the fractures complicated by injury to the soft parts—arteries, veins, lymphatics, tendons, etc., or severe laceration of tissues from dislocation of rough, bony fragments or joints, where such injuries demand a more careful and special treatment for their relief than is demanded by the fractured bones, as well as in cases in which, from the obliquity of the fracture, the retention of the fragments in position demands more than the ordinary plaster splint. With these exceptions I fully agree with you in the manner of treatment, and believe that the advantages derived from it are a more rapid and solid union of the fragments, an earlier development of function in the limb including the use of the muscles and the mobility of the joints, and the advantages to be derived to the patient from not being detained at home or in a hospital."

ILLUSTRATIVE CASES UNDER TREATMENT JANUARY 11, 1897.

CASE I.—R. I., aged forty years. Slipped on the ice and fractured external malleolus December 19, 1896. I saw him immediately after the injury, and at once applied the ambulatory cast. He was directed to go home and keep his leg raised during the rest of the day. He reported to me the next morning, and as the leg was in good order and the splint comfortable, he was instructed to walk. He has been up and about since. The cast will be discarded at the end of this week.

CASE II.—F. B., aged six years. December 21, 1896, while coasting on the snow he ran into a cart and fractured the tibia just below the middle third. He was taken to the accident room in the Roosevelt Hospital, and the leg was put up in plaster. He came to me one week later, when the dressing was removed, and as the leg was in good condition, the ambulant splint was applied. He reported to me the next day, and as the conditions were favorable and the splint comfortable, he was instructed to walk. In a few days he not only walked with ease, but rode his velocipede daily.

CASE III.—J. R., aged thirty-two years. On January 3, 1897, he fell a distance of six feet from scaffolding and incurred a Pott's fracture. I saw him the next day, and there was then present some edema, ecchymosis, complete disability, and some outward displacement. The foot was inverted and flexed to a right angle, and the ambulant cast applied. He has been able to walk well since. The cast was changed on the third day on account of the subsidence of edema. He will wear the cast for four weeks from the date of injury.

CLINICAL LECTURE.

SUPPURATING LARYNGEAL BURSA; FOREIGN BODY IN THE NOSE; DEFLECTION OF THE NASAL SEPTUM; HYPERTROPHIC CATARRHAL LARYNGITIS.¹

BY E. FLETCHER INGALS, M.D.,

OF CHICAGO;

PROFESSOR OF LARYNGOLOGY AND DISEASES OF THE CHEST IN RUSH MEDICAL COLLEGE.

CASE 1.—Suppurating Laryngeal Bursa.—This man is thirty years of age. Two days ago he noticed a small hemispherical growth, about an inch in diameter, just above the thyroid cartilage. It caused no inconvenience. Dr. Freer found nothing abnormal upon examination of the larynx with the mirror. He had specific trouble some months ago, but no symptoms remain excepting copper-colored patches on the skin. He says he has been having malarial fever for eight weeks past—an affection that is very rare in this city. Upon being questioned he admits that the fever never left him for three weeks, that he was kept awake nights, that he could not eat, and that he had violent headaches, and was very weak. The fever surely was not malarial. The growth is movable. It is apparently just beneath the skin, lying between the notch of the thyroid and the hyoid bone. It seems to fluctuate slightly on pressure. The only tumor that we are liable to find in this region is caused by an inflamed bursa. I have seen but two or three such cases, and I think no one has been able to give a satisfactory explanation for the growth. Although he has only noticed the growth for a couple of days, it may have been there a much longer time without discovery, as it has caused no discomfort. Introducing an exploring needle I obtain pus. It is yellower than usual, but not very thick. Other cases of this character that I have seen have been slow to heal. In this case we will withdraw the fluid and inject a solution of carbolic acid; at first 5 or 10 per cent. strong, hoping to cause adhesive inflammation. In several cases I have stopped the suppuration of an indolent abscess by injecting lactic acid, 30 to 40 per cent. strong, and have had healing take place without an external wound; therefore, if the carbolic acid does not succeed we will try lactic acid. The question arises whether this abscess resulted from syphilitic inflammation of the thyroid cartilage. As there has been no pain there can hardly have been sufficient inflammation of the thyroid to account for it. We conclude, therefore, that this is a suppurating bursa.

CASE 2.—Foreign Body in the Nose.—This three-year-old boy is suffering from pain in, and frequent bleeding from the left nostril. He was adopted only three days ago, and his new mother does not know how long the trouble has been present. Respiratory and heart sounds are normal. The odor is not offensive. Introducing a probe into the naris I find a hard substance, which is apparently a foreign body, about an inch from the nostril. A foreign body in the nose that can absorb moisture usually causes a very disagreeable discharge in

a short time, while a hard body may not become offensive. For the removal of foreign bodies from the nose I prefer a snare, as the wire takes up little room and usually passes the object easily. I anesthetize the nostril with a solution of cocaine, and with this ordinary polypus snare remove the body without difficulty, it being, as you see, a shoe button. It is well after removing an object from a child's nose to explore the cavity to see if there is anything left, as sometimes several objects have been introduced. In this case I find nothing more. No subsequent treatment will be necessary.

CASE 3.—Deflection of the Nasal Septum.—This boy has complained of difficulty in breathing through the right nostril for three years past. There is little discharge, and the mucous membrane looks healthy, but there is a marked deflection of the septum to the right, and considerable hypertrophy of the turbinated body on the left. The etiology of deflection of the septum is not well understood, but traumatism and blowing the nose by holding the thumb on one side are generally given as the cause. This boy could not have caused the trouble by blowing his nose, and he claims never to have had an injury of the part. I think both of these among the least of the causes of deflection. It seems to me that the common cause is hypernutrition, with the resultant growth that would occur from congestion. The septum is held firmly by the nasal and ethmoid bones above and by the superior maxillary below. If it grows too rapidly the result is the same as though the ethmoid and maxilla were approximated to each other; in other words, the septum must bend. As deflection continues, thickening occurs, especially at the lower part, and eventually there will be much thickening, so that exostosis will supersede deflection. It is not pleasant to perform the necessary corrective operation on a boy of ten or twelve years of age under cocaine, and it is not worth while to try it under a general anesthetic, but when the patient is older I would recommend running a trephine through the lower part, making an opening about one-eighth of an inch in diameter; and possibly a smaller trephine could be passed through at one or two places a little higher up. This should be done, as far as possible, beneath the mucous membrane, avoiding, if practicable, cutting through into the other cavity. I usually cut out with a knife or saw any redundant portions of the exostosis or enchondroma which remain after passing the trephine once. The septum will thus be so reduced in its vertical width that it may be forced to a perpendicular line. Enough tissue must be removed to destroy its resiliency, in order to get a good result. After the operation, an antiseptic tampon of surgeon's lint which has been saturated with a solution of iodoform and boric acid, and allowed to dry, is packed into the naris so as to hold the septum in proper place. This is removed at the end of four or five days, and then a gutta-percha tube is fitted, which is worn four or five weeks, until the wound is entirely healed.

CASE 4.—Hypertrophic Catarrhal Laryngitis.—This man, twenty-eight years of age, has found his voice growing weak during the last three years, and he is now aphonic. There is no soreness of the throat, and he is

¹ A Clinical Lecture delivered at Rush Medical College, Chicago.

otherwise in perfect health. There is nothing in his history or in the symptoms that would account for aphonia. On laryngoscopic examination I find the vocal cords a good deal thickened. The arytenoids are irregular and thickened, the left enlarged a little more than the right. It is a case of chronic inflammation involving the whole upper part of the larynx. This might result from simple catarrhal laryngitis, or from specific, tubercular, or malignant disease. He claims to have had no specific disease, and there is nothing in the history or former symptoms, or in present appearances, pointing to syphilis. In tubercular laryngitis there is generally less redness than in this case, but usually more swelling, and it is commonly attended by great pain and marked constitutional symptoms. In malignant disease the tumor begins at one point, gradually extends, and for a long time remains unilateral. This, then, must be one of those unusual cases of thickening of the larynx resulting from chronic catarrhal laryngitis. I have seen but two or three such cases during the last twenty-five years. Comparatively strong astringent applications long continued are most likely to benefit this patient. They should be applied every day or two, and should be strong enough to cause discomfort for half an hour to an hour. I shall also order for him moderate doses of iodid of potassium (seven and a half grains after each meal), to be taken possibly for weeks or months, but this is not given with a view to any specific effect.

MEDICAL PROGRESS.

The Physical Signs of Pleural Effusions.—In an interesting lecture dealing with the physical signs of pleural effusions, PITRES (*Archives Cliniques de Bordeaux*, 1896, p. 241) points out that displacement of the heart is an habitual symptom of moderate or abundant pleuritic effusions, although it is not observed in adults when the amount of fluid is less than a quart. It occurs when the fluid equals from two to three quarts, and is more pronounced when this is four or five quarts. When the effusion is right-sided the heart is displaced *en masse*, without notable change in its axes, from between two and two and a half inches downward and to the left, so that the apex-beat appears in the fifth or sixth intercostal space outside the left mammillary line. When a moderate effusion occupies the left pleural cavity, the heart tends to assume a vertical position. If the effusion is greater, the heart, retaining its vertical position, is carried *en masse* beyond the right margin of the sternum and is firmly compressed against the anterior wall of the chest. The apex-beat is then visible over several intercostal spaces in a curved line passing from the second or third right chondro-costal articulation to the epigastrium, and reaching to the level of the right nipple, or above. The pulsation in the left mammillary region is, however, due to the aorta and not to the apex, for the heart is not inverted in any case so as to assume an obliquity from left to right with its apex beneath the right nipple. The displacement of the heart as a result of pleural effusions is limited by

the tension of the pericardium, whose fibers, firmly attached above to the apex of the chest and below to the central tendon of the diaphragm, submit to a degree of traction corresponding to the depression of the diaphragm caused by the weight of the effusion; in proportion as the diaphragm is depressed the median septum of the mediastinum is made tense. Pleurisy with abundant effusion being always unilateral, it follows that the pericardium tends to the side on which the diaphragm is depressed. If the effusion occupy the right pleural cavity, the right half of the diaphragm is made tense, and the right or auricular portion of the pericardium sustains the tension, and as this portion is normally directed almost vertically, the heart is relatively little displaced to the left. If the effusion occupy the left pleural cavity, the left or ventricular portion of the pericardium tends to become vertical, and as this is normally oblique, the change causes the heart to be displaced toward the right. In both cases the heart is protected from the effects of an exaggeration of the intrathoracic pressure existing within the pleural cavity, distended by fluid. It is by virtue of this protection that the heart continues to beat. Without it the auricles would be restrained and the circulation be interrupted. The cardiovascular accidents and the sudden death which sometimes follow in the course of pleurisy and which have been attributed to displacement of the heart depend really upon multiple and varied causes, but they are not related as cause and effect to the degree of displacement of the heart, for they may occur when the heart is but little if at all displaced, and they may not occur when considerable displacement of the heart exists.

The Treatment of Profound Anemia Due to Puerperal Hemorrhage by Intravenous Injections of Artificial Serum.

MAYGRIER (*L'Obstetrique*, 1896, No. 4, p. 289) has reported an exceedingly interesting case illustrating the life-saving utility of large intravenous injections of artificial serum in the treatment of profound anemia following puerperal hemorrhage. A woman, twenty-four years old, in the eighth month of her third pregnancy, suffered a slight uterine hemorrhage, which was repeated two days afterward. Nine days later, following a long walk, a more copious bleeding ensued and this recurred a number of times in the course of the next few days, until the woman was greatly enfeebled and prostrated. When she came under observation the fetus was found to be dead, with its head occupying the left iliac fossa. The woman was now pale and cold, her pulse rapid and feeble, and the general condition so bad that further examination was desisted from until artificial heat had been applied, stimulants administered, a hypodermic injection of ether given, and ten ounces of artificial serum (consisting of five parts of sodium chlorid and ten of sodium sulphate to one thousand of water) introduced into the subcutaneous tissues. The right shoulder of the fetus was now found presenting on the left side of the mother's pelvis, while the cervix uteri was soft and dilatable. The membranes were ruptured and a foot drawn into the vagina. Further interference had to be suspended owing to the condition of the

patient, whose color had assumed a cadaveric aspect, with cyanosis of the lips and a scarcely perceptible pulse. Despite subcutaneous injections of ether, continued applications of heat and inhalations of oxygen, the state of affairs grew worse and death seemed imminent. It was now decided to employ intravenous injections of artificial serum, and two quarts were at once introduced into the left median cephalic vein. The effect was immediate and gratifying. The pulse became appreciable and regular, respiration was resumed with regularity, the face lost its lividity and assumed a pinkish hue and the lips became red. Consciousness returned and the patient expressed her sense of improvement. Forty-five minutes after the injection the amelioration began to recede and in a short time the fetus was expelled. The condition of the woman now grew even worse than it had been before, and a second injection of two quarts of artificial serum was made into the right basilic vein. Again the improvement was remarkable and now the placenta was expelled, together with a large quantity of clotted and liquid blood. This hemorrhage was controlled by an intrauterine injection of hot water, but was sufficient to render the condition of the patient once more precarious. Throughout the night inhalations of oxygen were kept up. A third injection, also of two quarts of fluid, became necessary, with the same happy effects as before. The patient was soon able to sleep and was in every way greatly improved. A slight elevation of temperature necessitated curetting of the uterus, which resulted in the removal of considerable fetid debris and the loss of some six ounces of blood. There were no further complications and the case proceeded to permanent recovery.

Application of X-rays to Anatomical Study.—REMY and CONTREMOULIN (*La Semaine Médicale*, 1896, p. 447), by the use of metallic powders in suspension in liquids used as injecting fluids, have shown that the distribution of the vessels can be studied and photographed with extreme accuracy. In the hand and forearm the small arterioles are easily seen, and the large veins can be traced throughout their extent.

THERAPEUTIC NOTES.

A Practical Method of Humanizing Cow's Milk.—The happy results which have followed the use of cow's milk which has been modified so as to conform closely to mother's milk have induced DUFOUR (*Rev. Men. des Malad. de l'Enfance*, September, 1896,) to seek out a practical method for the humanizing of cow's milk in any family. As is well known, cow's milk differs from mother's milk in containing an excess of proteids and salts, while it is deficient in sugar. The amount of fat in the two is essentially equal.

Dufour takes a large graduate which contains about two liters and has at the bottom a spout closed by a cork. Into this he pours the quantity of milk suitable for an infant of the required age for one day. The vessel is tightly covered and set away in some place which is cool in sum-

mer but moderately warm in winter. After about four hours the cream will have risen. Through the spout at the bottom one-third of the milk is now drawn off, a quantity of water is added equal to the milk which has been withdrawn, and 35 grams of milk sugar and 1 gram of salt per liter. The whole is mixed by shaking and poured into sterilized bottles. If the infant does not gain weight as fast as it ought, one to two spoonfuls of fresh cream should be added to the day's allowance of milk.

Absorption of Iron in the Intestine.—HOCHHAUS and QUINCKE (*Arch. f. experim. Pathol. u. Pharmacol.* 1897, vol. 37, p. 156) carried on numerous experiments in order to ascertain in what portion of the intestine iron was absorbed. The iron was administered in various forms, both organic and inorganic. The results showed positive absorption in all cases. This took place especially in the duodenum, whose epithelial cells were found to contain fine grains of sulphid of iron. These disappeared if no iron was given for some days. In the stomach and small intestine traces of iron were found only occasionally. In the cecum and the large intestine iron was found in smaller quantities, and in the opinion of the investigators iron is discharged from the economy through these tracts.

Spermatorrhea of Neurasthenics.—This symptom, insignificant in itself, but which occupies an important place in the thoughts of those neurasthenics in whom it is present, has been studied by ST. GOLDSPIEGEL (*Revue de Therap.*, January 1, 1896.). Spermatorrhea is to be attributed to an exaggerated irritability which is often hereditary. It is best treated by electricity, the positive pole being placed over the lumbar cord and the negative pole on the spermatic cord, the penis and the perineum. An application should last two or three minutes, and is to be repeated from four to six times a week during ten weeks. Static electricity may also be applied. Hydrotherapy and bromid of potassium have also given good results.

Dyspepsia Accompanied by Acne.—MITOUR (*Revue de Therap.*, December 15, 1896,) recommends for cases of dyspepsia accompanied by acne, light meals, frequently repeated. The food should be well chewed and of an easily digested character. Bread, spiced meats, preserved fish, pastry, butter, and fatty foods should be avoided. Alcohol and milk are also injurious. Water is the best drink and should be taken sparingly with meals. Medicinal treatment is three-fold; (a) to stimulate the secretion of hydrochloric acid there should be given before meals bicarbonate of soda with sulphate of soda and potash in small doses, or ipecac, or condurango; (b) to stimulate the muscular action of the stomach the tincture of nuxvomica may be given after meals; (c) to prevent fermentation naphthol, benzol, beta-naphthol, or salicylate of bismuth are indicated. For constipation with intestinal inflation sulphate of soda and calomel are recommended. In certain cases hydrotherapy, abdominal massage, gastric lavage and electricity have given excellent results.

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PLEURISY.

THIS is one of the most frequent of the milder diseases that afflict the human race and is likewise a most distressing malady. In the management of it the resources of the attendant are more especially invoked in the department of those duties which are directed to promptness in restoring his patient to health and in making him comfortable during this process. The subject is handled so concisely and yet so completely and satisfactorily in the article which we publish this week and in the discussion which follows, that we cannot resist calling the special attention of our readers to it. It is valuable; it is practical.

THE CHAMBER OF EMULATION.

JEAN LOUIS PETIT was not more famous as a surgeon than as a teacher. The fame of the Paris School of Medicine, in the last century, was largely due to his personal power as a teacher, and his skill as an organizer. During the period of his incumbency of the position of dean of that school, an event occurred which conveys a lesson that the teachers in our medical colleges would do well to heed. It appears that at one time the professors became very lax in the performance of their duties.

They arrived late at the college, the lectures were rapidly delivered, and were the same that had often been heard before. On the conclusion of the lecture the individual professor hastily left the college, and no student had an opportunity to ask a question which would solve a doubt or aid him in his course of study. The students finally became disgusted with the farce and adopted the very sensible resolution that they would no longer attend lectures, but would teach themselves. Accordingly they notified the dean that they would no longer waste their time in the lecture-room, and thereupon they organized a society called the Chamber of Emulation. The plan of instruction devised was that of mutual aid, the senior student especially acting as teachers.

The success of the movement was so great as to alarm the faculty, and Petit undertook to counteract the new departure. At first he endeavored to win the students back by giving fanciful lectures on attractive subjects, as surgical instruments, exhibiting them and explaining their uses and comparative merits. This effort having signally failed, he adopted a method of teaching not unlike that which proved so popular in the Chamber of Emulation. He announced that, instead of giving formal lectures as before, he would propose questions for discussion and the students should have the greatest freedom in debating with him, being allowed to ask and answer questions freely. This proposition was received with great favor, and the students returned to the lecture-room and to their allegiance to the professor. They were only too willing to give up their own organization when the professor consented to take the place of the senior student and both question and be questioned.

This episode in the history of the Paris School of Medicine strikingly illustrates the defects in our system of medical instruction as viewed from the student's standpoint. To him the lecture-room has few attractions when he is studying the technical branches as anatomy, physiology, chemistry, and the principles of medicine, surgery, and obstetrics. And even in studying the practical branches he labors under great disadvantages when the instruction is given only by formal lectures. If he is a graduate of a literary institution he notices a vast difference between the literary and medical colleges in the method of teaching purely technical branches. He learned his Latin, Greek, and mathematics in the class-room of

the tutor or professor by questions and answers, but he is now to learn his anatomy, physiology, and chemistry, by listening to a lecturer with whom he rarely if ever exchanges a word. These lectures are by no means always instructive. Too often, as in the Paris School, they are not prepared for the occasion, but are delivered in a perfunctory manner. At the close of his lecture the professor usually hastens from the school as if fearful of having a question asked him.

It is not surprising that in the medical schools which adhere to the old system of instruction in the technical branches by formal lectures, the earnest student finds little positive aid in the discourses which, though often entertaining, are too frequently un-instructive. He soon discovers that he can learn anatomy, chemistry, and physiology, only by close application to text-books, by work in the dissecting room and laboratories, and by the personal instruction which he obtains in the examination room of a competent teacher. To secure this kind of assistance the student is compelled either to employ a private medical teacher and thus pay a large second tuition fee, or he associates himself with other students for mutual improvement by discussions and examinations, thus creating a "Chamber of Emulation." When he is provided with these aids to study he attends the lectures only for pastime or amusement, or to comply with the rules of the school. At the close of the term he is certified to have attended a full course of lectures. Thus, in due time, he complies with the letter of the rules for graduation and appears before the faculty for examination. No member of the teaching body knows him personally, and he is recognized only by those who recall a face which they have somewhere and at some time seen. He proves to be a remarkably apt scholar in every branch, and even answers the usual "catch" questions by each professor, having been properly "coached" by his preceptor. He receives his diploma and departs and ever holds in grateful remembrance the young teacher, outside the college walls, to whom he is indebted for his medical education.

We commend to the thoughtful consideration of the faculties of our medical schools the incident in the Paris school and the lesson which it enforced upon Petit and his colleagues. The same question which they raised is on the lips of hundreds of students to-day who are beginning their course of study.

In their own private circles they ask: Why should not all branches of the medical sciences be taught by personal contact of the student with the living teacher as in the academic course? Why should not a sufficient number of teachers be employed so that the class may be divided into small sections which would bring the teacher into daily personal relations with each student that he would learn his mental traits, his habits of study, the peculiarities of his modes of thought, and thus be able to aid him promptly in all his difficulties by explanations, illustrations, or demonstrations? It is admitted by every practical teacher that this is the true method of teaching any technical branch of science, and our schools can not much longer delay adopting the scheme and making ample provision for enforcing it.

SURGERY OF THE LUNG.

IN the year 1710, nearly two centuries ago, Baglivi suggested that cavities in the lung might be successfully treated by operation. During the next century and a half, an occasional operation was performed for the relief of pulmonary affections, but the surgery of the lung was unsystematic and largely experimental until Graux in 1850 reported the results of thirteen operations. All these cases were, however, unsuccessful, and these results combined with other similar failures retarded the progress of pulmonary surgery for another quarter of a century.

A fresh impulse was given to this branch of surgery some fifteen or twenty years ago when numerous successful experiments on animals, where portions of the lung, and even entire lobes, were excised, led to the hope that the same success might follow operations on the human lung. This expectation, however, has not been fully realized. Especially is this true in regard to tubercular processes which would offer a vast field for operative interference were success to follow such treatment. In this class of cases there seems to be but little hope of benefit to be derived from excision of tubercular foci. Reclus, in a most admirable address which he delivered before the French Surgical Congress in 1895, said, "Resection of the lung for tubercular disease seems to me condemned past appeal." This judgment may be somewhat too severe and yet it probably expresses the view of most conservative surgeons on this subject.

The results of simple incision into tubercular cavi-

ties have been somewhat more favorable. A number of patients have been benefited by this procedure, and in certain cases this operation seems indicated. A successful termination must be exceptional, however, as the original focus of disease must still remain, and probably other foci also. Reclus reports eight such operations upon an equal number of patients, only two of whom died, while five were improved or cured. He states, however, that all were carefully selected cases. Laufert and Worth have calculated that out of 100 such cases, 5 die at once as the result of operation, 10 die within a fortnight, 15 more inside of a month, 10 are improved, and zero represents the number of recoveries. Paget reports 24 operations, with 9 deaths, 5 recoveries, and 5 improvements.

Operation for pyopneumothorax, as the result of tubercular ulceration, has been performed in a number of patients, in two of whom the opening was successfully closed by suture. The difficulty however of locating the perforation must be great, and at best temporary relief only can be afforded.

The results of operation for growths in the lung are equally disappointing. When carcinoma or sarcoma occurs primarily the growth is in all probability so extensive before the diagnosis can be made that extirpation is impossible. In some cases where the malignant tumor has extended to the pleura and lung from the chest it is possible that extirpation might be successfully accomplished.

In abscess, gangrene, and hydatid cysts, sufficient experience has accumulated to enable us to judge approximately of the risks of operation and of the chances of recovery. The results are becoming more and more favorable and undoubtedly will be still more encouraging as soon as physicians can be convinced that operation is not attended with great risk and that it offers a fair chance for recovery.

The results of operation for pulmonary abscess are certainly full of promise. Thus Fabricant reports 38 cases, with 29 recoveries, and 9 deaths. Reclus reports, out of 23 operations which have been performed within the past ten years, 20 cures and 3 deaths. The old idea that adhesions between the lung and parietal pleura were a requisite for successful operation is happily passing into oblivion. Adhesions are unquestionably of great advantage. When they exist the danger of infecting the pleural cavity and thus exciting a pyopneumothorax is very slight

and the incision into the abscess cavity is a comparatively simple operation. Many successful operations have been performed however where there are no such adhesions, as for example the cases recently reported by Smith and Frederick Treves in the *Lancet*, and by Northrup in the *N. Y. Medical Journal*. If adhesions are absent the operations can be carried out in two stages, at the first, suturing the two pleural layers; at the second, opening the abscess after a delay of a few days. Unfortunately, however, such delay is generally inadmissible. It means death. The abscess must be opened at once. In certain cases the parietal pleura may be sutured to the lung, but generally the patient's condition is such that the operation must be rapidly completed, the pleural cavity being protected as well as possible by sponges and gauze.

In gangrene the mortality without operation is about eighty per cent. In certain cases of diffuse gangrene operation is out of the question, and the case is hopeless. In circumscribed gangrene operation offers to the patient a fair chance of recovery. Excepting a few cases of gangrene occurring in young subjects where the patch is small and near the apex, it is a question whether operation should not be advised as soon as the diagnosis is made in every case of circumscribed gangrene where the general state of the patient or some intercurrent disease does not render all treatment hopeless. As in abscess so in gangrene; the operation, if otherwise indicated, should be performed, adhesions or no adhesions.

Another reason for delay which is sometimes advocated is that operation is not indicated until after the stage of consolidation has passed and deliquescence begun. The latter stage however is generally reached before the diagnosis has been made. Of course the patient may recover without operation, but the dangers of sepsis or the conversion of a circumscribed into a diffuse gangrene more than counterbalances the risk of an operation. These risks are not very great, as may be judged from the statistics of Heydweiller who collected 40 cases treated by operation prior to 1892, with 22 recoveries, 4 improvements, and 14 deaths. The more recent cases of Reclus number 14 operations, 11 of the patients being cured, 1 being improved, and only 2 having died.

In cases of bronchiectasis the results of operation seem to be less hopeful. More than one cavity gen-

erally is present. One may be incised and healed but others are left. Reclus reports 12 operations, 8 of which terminated fatally, 4 of the patients being improved, but none cured. Paget reports 5 cases all of whom were improved, but he adds that all were exceptional cases. The conclusion of Truc seems correct: "When the cavity in the lung is the essential lesion, when the symptoms of septic absorption dominate the scene, when there is high fever and the patient is shaken by cough and exhausted by profuse expectoration, then without raising vain hopes and simply to alleviate suffering we may have recourse to incision of the lung. Now and again a marked improvement has been noted."

The results of operation for hydatid cysts have been most satisfactory, indeed more so than for any other pulmonary affection. Paget has collected 45 cases thus treated, 37 of the patients being cured, and 6 having died. In this condition operative interference is always indicated.

ANDREW J. MCCOSH, M.D.

ECHOES AND NEWS.

Vacant Professorships in Philadelphia.—The chairs of anatomy, clinical surgery, and genito-urinary surgery are vacant at the Medico-Chirurgical College at Philadelphia. Only the chair of anatomy is salaried. All applications should be addressed to Isaac Ott, Dean.

Control of Tuberculosis in Rome, Italy.—We learn by letter of Dr. McDonald, in the *Boston Med. and Surg. Journal*, that tuberculosis is ranked by the Board of Health of Rome among contagious diseases, and prompt notification of all cases is required. Indeed, almost the identical system of management recently promulgated by the New York Board of Health is in thorough active operation there.

The Davy-Faraday Research Laboratory.—The opening of this public laboratory in London will doubtless mark an epoch in chemical science in Great Britain. It was established by Dr. Ludwig Mond, at a cost of \$500,000. Of this, \$170,000 was expended in the building and its equipment, and \$330,000 invested as an endowment. It is open to persons of either sex and any nationality, who can satisfy the Laboratory Committee that they are qualified to undertake original scientific research in pure or physical chemistry.

A Confusion of Names.—We are informed that some confusion has arisen at Carlsbad (Bohemia) because patients who are accredited merely to "Dr. Kraus" find, on arriving, three Drs. Kraus in active practice, viz.: Dr. J. Kraus, Sr., Dr. Frederick Kraus, and Dr. Oscar Kraus. Dr. J. Kraus, Sr., is no doubt,

the physician usually meant, he having been associated with Carlsbad so many years, but whether he be or not, it is evident that confusion can only be avoided by correspondents using the full name of the Dr. Kraus intended.

The Tennessee Centennial Exposition.—The Centennial and International Exposition to celebrate the one hundredth year of Statehood by the citizens of Tennessee will be held in Nashville, and the opening day is fixed for Saturday, May 1, prox. Already the sum of over \$500,000 has been subscribed by the citizens of the State, and an additional \$130,000 has been appropriated by Congress for a special Government exhibit. A separate and special building for medical and surgical appliances and hygiene will be provided for everything pertaining to these sciences and arts.

The British Army in India Incapacitated by Sexual Disease.—It is reported that out of 73,000 British soldiers now in India only 24,000 are free from a special disease in a more or less severe form. One-half of the whole army is incapacitated for prolonged marching service. Preventive measures against these diseases proved very effective among the Indian forces when medical inspection of the cantonments women was practised. Medical regulation of army prostitutes was abolished some years ago through the influence of the English religious organizations. An appeal has been made to the home government by the Viceroy's Council to reestablish the former custom.

English View of the Plague in India.—Now that the English people have contributed generously to the relief of the famine-stricken, plague-infested fellow-subjects of the Queen-Empress in India, and thus avoided a possible charge of endeavoring to shirk a duty of charity, they have made the situation the occasion for discussion of that pitiless topic, "the survival of the fittest." The public press is endeavoring to answer the following questions: What part do these periodic famines and great epidemics play in the economy of nature? Are they, everything considered, the unmitigated evil which they appear to be? Was Darwin right or wrong in making these great fatal visitations the basis of his theory of natural selection?

Electricity as a Measure of Temperature.—Prof. Dewar announced before the Royal Institution of London January 22 the results of some recent experiments with liquid oxygen and other low temperature investigations. He explained that the temperature of liquid oxygen is constant at 182° centigrade below zero [295° 6 F. below zero]. This scientist has discovered in electricity a means of measuring such extraordinary degrees of cold. As he explains it there is an electric balance, for instance, between a temperature 100° above freezing and 100° below freezing. The temperature of liquid oxygen is determined by immersing one thermo-electric junction in a substance which is boiling at a known temperature of 182° C. above zero, and another in liquid oxygen itself. The two currents which are produced exactly balance each other.

Dinner of the Long Island Medical Society.—The sixth annual dinner of this society took place at the Montauk Club, Brooklyn, Tuesday evening, February 2d, and proved to be one of the most successful affairs of the kind that the society has yet given. Dr. W. H. Clowminzer, president of the Society, acted as toast-master. "The Long Island Medical Society" was responded to by Dr. Henry T. Hotchkiss, the vice-president, and "The Future of the Society" by Dr. John O. Polak. In response to the toast, "Medical Politics," Dr. Arthur C. Brush, a member of the State legislature, made a speech which was listened to with intense interest by the Society, and his remarks were heartily endorsed by subsequent speakers. Dr. Philip T. Brennan spoke on "Dangers Threatening Our Profession," and Dr. S. J. McNamara on "Any Old Thing." Other interesting remarks were made by Dr. R. J. Morrison, Dr. J. M. Clayland, Dr. A. S. Treadwell, Dr. W. E. Butler, and others.

The Sale of Patent or Proprietary Medicines in New York.—A bill has been introduced in the New York Legislature declaring that no drug, medicine or mixture of drugs, herbs or medicines, commonly known as patent or proprietary medicine, shall be sold, offered or exposed for sale in this State, unless an analysis or formula of the contents thereof has been filed in the office of the State Board of Health, and a certificate issued by such Board that according to the ingredients thereof, as indicated by such analysis or formula, the sale and use of such patent or proprietary medicine for the purpose for which the same is advertised or the purchase thereof solicited will not be dangerous to the public health. Every such analysis or formula filed in the office of the State Board of Health shall be preserved as a record of such board, but shall not be open to public inspection, nor shall the contents thereof be revealed by any member of such board, officer, agent or employe thereof, except for the purpose of a criminal prosecution as provided by this act.

CORRESPONDENCE.

THE OPTICIAN'S BILL BEFORE THE LEGISLATURE.

To the Editor of THE MEDICAL NEWS.

DEAR SIR: A bill has been introduced in the legislature known as Assembly Bill No. 459, entitled "An Act to regulate the Practice of Optometry in the State of New York," which decrees that the Regents shall appoint a Board of Examiners to examine any person who desires to treat any condition of the eyes requiring glasses, and grant a certificate of proficiency which must be hung in a conspicuous place in the office of the recipient. The opticians who call themselves refracting opticians are behind this measure and contend that the refraction of the eye is no part of medicine, and that physicians have no right to take unto themselves the exclusive privilege of this department.

Every physician must be fully aware of the evil consequences that will of necessity follow the passage of a measure of this kind, as the examination requires simply a

knowledge of optica, and is one which any person can prepare himself for in a very short time. The sponsors of this measure claim that they need protection; that they have been fitting glasses for a long time, and that they have a right to continue to do so. In answer we say, that the time was, and not so long ago, when the pulling of teeth, blood-letting, and many of the present functions of the physician or those having a medical education, were in the hands of the barbers; but increasing education has demonstrated that in order to protect the public, medical privileges, of which the fitting of glasses is one, can be safely entrusted only to those, who, by careful medical training, are capable of discriminating between health and disease.

The present standard of medical education is higher in the State of New York than anywhere in the United States, and we urge the members of the profession to keep it so. If every physician who reads this statement will write to his or her representatives in the Senate and Assembly, protesting against the passage of Assembly Bill No. 459 in any form which obviates a medical education as something which would be extremely dangerous to the public, the defeat of this measure is assured.

The Committee on Legislation will be happy to furnish names of representatives, or any desired information.

Signed,

D. B. ST. JOHN ROOSA,
 EGBERT H. GRANDIN,
 CHARLES E. NAMMACK,
 WILLIAM R. PRYOR,
 FRANK VAN FLEET, Chairman.

NEW YORK,
 February 8, 1897.

OUR PHILADELPHIA LETTER.

[From our Special Correspondent.]

MEETING OF THE COLLEGE OF PHYSICIANS—DISCUSSION OF THE RELATION OF NERVOUS DISORDERS IN WOMEN TO PELVIC DISEASE, BY DRs. HIRST, MONTGOMERY, WEIR MITCHELL, MILLS, DERGUM, SINKLER, ANDERS, SOLIS-COHEN, AND OTHERS—MEMOIR OF DR. WILLIAM HUNT.

FEBRUARY 6, 1897.

At a stated meeting of the College of Physicians, held on February 4th, Dr. Thomas G. Morton read a memoir of Dr. William Hunt. Letters quoted by Dr. Morton from Oliver Wendell Holmes to Dr. Hunt, who attended Dr. Holmes' son while suffering from wounds received in the war of the Rebellion, as well as the correspondence between Dr. D. Hayes Agnew and Dr. Hunt in regard to the latter's defense of the methods of the American surgeons in their treatment of President Garfield against the attacks made by Esmarch and other continental authorities, rendered the memorial peculiarly interesting.

The main business of the meeting—the discussion of the "Relation of Nervous Disorders in Women to Pelvic Disease"—was opened by Dr. Barton C. Hirst, who quoted cases disproving the fallacy of always regarding pelvic disease as a causal factor in such disordered states as hysteria, hystero-epilepsy, and the like. In a number of patients coming under his notice, in whom a diagnosis of uterine or ovarian disease had been made to account for the nervous condition, examination had shown the uterus

and appendages to be, in some of the cases, absolutely normal, and in others rudimentary. Moreover, sustaining and developmental treatment, addressed to the mind and body, without reference to the possibility of pelvic disorder, had, in the vast majority of cases, proved successful. Dr. E. E. Montgomery, continuing the discussion from the gynecologist's standpoint, said that while deprecating the indiscriminate ablation of the ovaries or uterus, there were cases of actual disease of these organs augmenting or exciting a mental or nervous disorder which their removal would greatly ameliorate. The views of Drs. Shoemaker and Noble practically coincided with those already expressed.

Dr. S. Weir Mitchell said that severe shock of almost any kind had, in his experience, been as beneficial in temporarily improving the mental and nervous condition of such states as those under consideration as had ever ovariectomy or kindred operations. He had never seen a case of epilepsy benefited by operation of this kind, and premature stoppage of the menstrual function had singularly failed as a curative measure in hysterical and mental disorders.

Dr. F. X. Dercum argued that if such trivial lesions as a slight perineal tear and inflammation of the ovaries were responsible for such conditions as hysteria, hystero-epilepsy, etc., much more marked should be the nervous symptoms caused by malignant disease of the genital tract. In cancer of the uterus, however, nervous symptoms such as those under discussion were rarely, if ever, met. Of the so-called hysterical stigmata, he mentioned ovarian tenderness, but to condemn the name, and to substitute inguinal tenderness as a better term. This tenderness he believed to be superficially located in the abdominal wall. For, by fixing the point of most exquisite pain externally with the index finger of the right hand and, *per vaginam*, bringing the same finger of the left hand directly beneath this locality, the two could be approximated, the one directly over the other, with only the thickness of the abdominal parietes intervening. Pressure now at this point produces symptoms identical in every respect with those consequent upon so-called ovarian pressure.

Dr. C. K. Mills believed hysterics, hystero-epilepsy, and insanity to be somatic conditions, whose origin was entirely independent of pelvic disease. Therefore he could not see how the removal of any pelvic organ or disease could have a *curative* effect on these conditions. Yet, if any of these viscera were diseased, their remedy should constitute an integral part of the rational and successful treatment, for by so doing the factor most concerned in augmenting the nervous condition might possibly be eliminated. Speaking of the benefit to be derived in mental unbalancing from ovariectomy, he believed the benefit to be due as much to the shock of the operation as to any curative effects accruing from the procedure.

Dr. Whorton Sinkler said that he had seen a severe case of melancholia markedly benefited temporarily by the severe shock sustained in falling forcibly against a marble mantel, causing a scalp wound of considerable extent, the shock of the fall clearing up the mental condition at once, though for a short time.

Dr. J. M. Anders, taking up the discussion from the standpoint of general medicine, mentioned tachycardia occurring during menstruation, various neuroses of the stomach, and a cough due to reflex bronchial stimulation or congestion as some of the nervous disorders connected with or excited by pelvic disease.

As bearing upon the subject under discussion, Dr. L. W. Steinbach and Dr. S. Solis-Cohen reported a case of kleptomania in association with uterine and rectal disease. The case is one of interest from the notoriety given to it by the secular press, as well as from the standpoint of medical jurisprudence, as the patient was legally prosecuted in England, and pleading guilty to the charge of larceny, was sentenced to imprisonment, but was released upon medical testimony submitted in her defense. The patient's history is briefly as follows: Mrs. C., aged thirty-four, has been married eleven years. She had one child ten years ago and no other pregnancy. During pregnancy she suffered much from hemorrhoids, and was operated upon, and since then has been subject to prolapse of the rectum, at times causing much distress. Previous to fifteen months ago she had suffered little from dysmenorrhea. About that time, following exposure during menstruation, the flow ceased and the patient was confined to bed for some days with headache and feverish symptoms. Since then there has been no real menstrual flow; there was more or less offensive discharge at irregular intervals, and after two or three months a slight watery discharge, at what should have been the menstrual period. For some days preceding this there has been considerable pain in the back and abdomen. The patient showed great nervous irritability and excitement. Inquiry into the patient's life showed that she had ever been "on the go," her day being one of excitement rather than mental occupation. The cheeks are constantly flushed. The left face is moved less than the right, the difference being easily observed; the eyes are roving and restless. In London (the husband states) she heard voices and would go to the door to listen. Later these were also heard at night. She was born with some foot trouble, walked at five years, and wore irons. The heart and lungs were normal, as was the urine. Vaginal examination by Dr. Steinbach showed that the uterus was hypertrophied to one and a half times its normal size; the mucous membrane was irregularly roughened, and bled on the slightest touch by the sound. The cervix had a bilateral laceration, more extensive on the left side. The tear was well cicatrized. The rectum was found to be fissured below, ulcerated above. There were evidences of former ulcers that had cicatrized, and several large hemorrhoids, which bled freely.

Later, under ether, the sphincter ani was dilated, the fissures cauterized with a Paquelin thermo-cautery, the ulcers treated in the same manner, and the hemorrhoids clamped and cauterized. The uterus was curetted and then the trachelorrhaphy performed by denudation of the cicatricial tissue and suturing with silkworm-gut. The medical treatment of the case consisted in rest, nourishment, and massage. Since the operation she has menstruated twice, four weeks apart, and normal in

amount and character. Within two weeks she has left Philadelphia for her home, apparently recovered physically, with her mental condition of such a character as to furnish some grounds, at least, for the hope of complete recovery. Dr. S. Weir Mitchell, who was called in consultation on the case, gave the opinion, which I quote in the hope that it may furnish food for reflection on the part of those who judge too hastily, without the full knowledge of the facts, in cases of just such a character as this.

"After the most careful study of the evidence in the case of Mrs. C—, and of the opinions of the English experts, also from a full knowledge of her case from personal examination of her condition while in this city, I have reached the following conclusions: (1) That Mrs. C—, when arrested and for a long time before, was suffering from a condition described by alienists as kleptomania. It is my carefully considered belief that when she took articles from others she was not then in a state to be aware of the moral nature of her guilt, or to recognize the almost certain consequences of repeated and often careless thefts. (2) I believe the basis of her mental disease to have been hysterical, and that it was largely brought about by long neglected disease of the rectum and uterus. This has now been skilfully cared for, and it is my hope and belief that the results of the operations performed will aid in the cure of the mental malady which the condition described had a large share in bringing about. (3) I do not think that Mrs. C— was morally responsible for her acts during her stay in Europe, or for some time before that period. As to this I am at one with the English alienists, and believe the Home Secretary to have acted with ample proof when he released Mrs. C— as insane."

OUR PARIS LETTER.

[From our Special Correspondent.]

PASTEUR'S TOMB—PROPHYLAXIS IN CHILDREN'S HOSPITALS—PRIZE WINNERS OF THE FRENCH ACADEMY OF MEDICINE FOR 1896—A SUGGESTION FOR AMERICAN SURGEONS.

PARIS, January 16, 1897.

PASTEUR'S tomb at the Institute Pasteur is now open to visitors on the first and third Saturdays of each month, to-day being the first that the medical visitor, who did not care to be disturbed by the curious crowd that flocked to the opening, might make his visit in peace. The mausoleum is worthy of the great man whose mortal remains rest in it. The Minister of Public Instruction, in his address at the formal opening, on December 26, when the sarcophagus was transferred from the chapel in Notre Dame, where it had reposed for over a year, said that in other times pilgrimages to the tombs of great benefactors of the race had drawn crowds of devotees for years, sometimes centuries, after their death. To this tomb of the humble scientist, whose life had been spent so faithfully and so fruitfully for the benefit of his fellows, he hoped that during succeeding years the devotees of science would come and would there appreciate the greatness of the master's work.

The tomb is a marvel of artistic beauty, and is well

worth a visit merely as a work of art. The architect was Charles Louia Girault, who has been chosen as one of two to make the plans for the buildings for the Universal Exposition to be held in Paris in 1900. The model that suggested the general plan of the mausoleum is the Galla Placidia at Ravenna, that wonderful work of Byzantine art that has attracted so much attention for some fourteen centuries. The cartoons for the interior decoration are from the hands of Luc Olivier Merson, who has just been engaged to design the decorations for the new Opera Comique here in Paris, and who shares with Puvis de Chavannes the honor of being the greatest decorative artist in France. The decorations are in mosaic by Auguste Gilbert Martin, who is eminently worthy of his collaborators.

The mural and tectal decorations are of varying greens on a groundwork of gold, that make a strikingly rich and pleasing contrast. Pasteur's work on wine and beer and silk worms give a very aptly symbolic meaning to the profuse employment of the beautiful shapes and the varying shades of green of the vine, the hop and the mulberry leaf, and this has been taken advantage of with wondrous effect. In the dome of the little Greek cross-shaped mausoleum are four figures of Faith, Hope, Charity and Science. They are sisters who are said not always to live in harmony, and if the youngest of the group does not find herself regarded askance by her older sisters here, especially by the eldest, Faith, it is that in some wonderful way in the life of the man whose ashes they now guard, devotion to one did not lead to neglect of the others, for biological studies, that are said usually lead away from old-established beliefs almost inevitably, did not, in his case, disturb the even tenor of the old ideas as they had come to him from a lowly but ever well-beloved father and mother.

Abroad one cannot help but think that a cloud still hangs over Pasteur's fame because of the lingering doubts still so prevalent as to the success of his treatment for rabies, though none, absolutely none of them, are left here in France. The other wonderful work of his life lies hidden somewhat behind that cloud, and its suggestiveness for other workers along collateral lines, sometimes at great distances from his discoveries, is lost sight of. It takes the beautiful tribute of a man like Sir Joseph Lister to make some of us carping foreigners realize how much Pasteur's work means to modern scientific medicine and surgery.

Lister attended the exercises as the representative of the British Scientific Society, and his tribute was that of one who felt how much of the work that he had done himself had owed its suggestion to that of another, and that other the man he was happy to be able to honor by bringing him the tribute of distant brothers.

In marble, beautifully veined in irregular dark lines, in red letters that mark the abrupt, incongruous, and usually too prominent effect of an inscription, are the scanty words that chronicle a life work rich in bounty for mankind, and that form some of the most brilliant pages in modern science.

1848. Molecular Dyasymetry.

- 1857. Fermentations.
- 1862. So-called Spontaneous Generation.
- 1863. Studies on Wine.
- 1865. Studies on Silk Worms.
- 1871. Studies on Beer.
- 1877. Virulent Contagions.
- 1880. Virus—Vaccines.
- 1885. Prophylaxis of Rabies.

They are just now deeply interested in France in the question of the prophylaxis in children's hospitals of what history sheets are prone to glibly call the usual diseases of childhood. All of them contagious, and to a great extent preventable by the adoption of proper hygienic measures, it has been the custom to make too little of some that are usually mild, and to consider almost that it was as well for an individual to have them when young and be done with them. More and more are the unsuspected after-effects of contagious diseases in childhood encroaching on the domain of etiological pathology in the matter of degenerations, both nervous and visceral, in later life. Besides this, some of these diseases have a distinct mortality of their own that is alarming enough when the statistics are presented. Whooping-cough is just now occupying attention in this line. In private practice in France the mortality ranges from six to ten per cent.; in hospital practice it is from twenty to twenty-eight per cent. Complications of the disease almost inevitably ensue in at least one-half the cases of the children of the poor, whose constitutions are undermined by other diseases when the infection of whooping-cough takes hold in the hospitals. Yet a series of well authenticated observations show that the limit of the contagiousness of the disease is always the apartment of the patient, the presence of a corridor between infected and uninfected wards being sufficient to protect the uninfected if reasonable thought and not very special additional precautions be taken.

French children's hospitals are about to take measures to segregate as far as possible all cases, even of minor infections, and prevent their spreading beyond original cases.

Just before Christmas the French Academy of Medicine announced its prize winners for the year 1896. Among a dozen of foreigners who received mention was one American. One is tempted to wonder if our enterprising countrymen would not be heard from more frequently in some of the competitions for the valuable prizes given for practical medical and surgical subjects if the conditions of competition were known. Here, for instance, are two competitions where Americans would not be handicapped in the race; the Laborie prize of 5,000 francs annually to the author of the work which will have caused the most notable advance in surgery during the year; the Argenteuil prize (sexennial) to be awarded next in 1899—value, 6,800 francs—to the inventor of the most noteworthy improvement in the matter of curing or ameliorating strictures of the urethra, or to the author of the best work on the treatment of other diseases of the urinary passages. In neither competition are translations required.

TRANSACTIONS OF FOREIGN SOCIETIES.

Paris.

ULCERATIVE STOMATITIS CAUSED BY ANTIPYRIN—SUCCESSFUL REMOVAL OF THE ENTIRE BLADDER—SURGICAL TREATMENT OF DEAFNESS—SOME SUCCESSFUL NEURECTOMIES—A NEW THEORY OF CICATRIZATION IN THE CORNEA—PENETRATING WOUND OF THE ABDOMEN CAUSED BY A BLANK CARTRIDGE—INDICATIONS FOR OPERATION IN RENAL TUBERCULOSIS—DEATH AFTER OPERATION IN EXOPHTHALMIC GOITER.

At a meeting of the Therapeutic Society, held December 23, 1896, DALCHE reported a case of *ulcerative stomatitis due to the absorption of antipyrin*. The patient was a gouty individual of sixty-five years, who had often taken antipyrin without bad effects. One day, after a dose of thirty grains, an aphthous stomatitis appeared. An injection of fifteen grains of the same drug produced an ulcerative stomatitis with a purpurial eruption of the skin. The urine contained an excess of phosphates and urates, but no albumin. A few days later it contained 3 per cent. of sugar. The cause of the intoxication by antipyrin could not therefore be explained by renal insufficiency.

At a session of the Academy of Medicine, held December 29, 1896, GARNAULT said that *chronic deafness may be treated by excision of the tympanic membrane*, ablation of the malleus and incus, and mobilization or extraction of the stapes, by means of operation through the mastoid process. This operation is justifiable when one has to deal with deaf persons, in whom it may be asserted, or at any rate assumed as highly probable, that the cause of the deafness lies solely or principally in lesions of the apparatus of transmission. Rinne's method of exploration nowadays permits the surgeon to distinguish with absolute certainty between cases in which operation should and should not be performed. In his opinion all patients by whom the vibrations of a tuning-fork are perceived more distinctly through the skull than through the air should be operated upon.

January 5th, TUFFIER described an operation performed upon a man aged forty, in whom a tumor occupied the entire left wall of the bladder and the mucous membrane of its fundus without infiltration of the lymphatic glands. The entire bladder was removed. Phlebitis of the right leg followed the operation. The ureters were catheterized for seven days, and then a hypogastric siphon tube was employed. The patient left his bed in seven weeks, and went to work in ten weeks, using a hypogastric receptacle for the urine. Upon microscopic examination the wall of the bladder was seen to be infiltrated by an alveolar epithelioma of an unusual type.

At the session held January 19th, PEAN presented a man, aged twenty-five, affected with multiple neuromata, upon whom he had practiced *resection of considerable portions of the median and ulnar nerves*. This operation was followed naturally by a paralysis, both motor and sensory, of the tissues supplied by these nerves. This paralysis gradually disappeared, until the patient was able to use his hand perfectly, except for delicate motions.

Ten months after operation all the neuromata which existed in the forearm and in the subclavicular region had disappeared.

CHIPAULT showed a patient upon whom he had performed resection within the dura mater of the posterior root of the eighth right cervical nerve, for an obstinate neuralgia exactly corresponding to the distribution of this nerve. From the instant the patient recovered from the effects of the chloroform up to the time of his presentation to the Academy—a period of two years—there had been no return of the pain. The area of distribution of the nerve was hyperæsthetic for about twenty-four hours. Aside from this there was neither motor nor sensory disturbance.

At the session of the Academy of Sciences held December 28, 1896, RANVIER advanced a new theory in respect to the *cicatrisation of wounds in the cornea*, based upon experiments made upon living rabbits. As is well known, the cornea consists of an anterior epithelium, a layer of connective tissue without blood vessels, and behind, a single line of endothelial cells resting upon the vitreous membrane. The anterior epithelium is composed of several layers of cells, the deeper ones being cylindrical, the middle cubical, and the superficial flattened. Some of the deeper cells, known as foot-cells, are softer, and are filled to a greater extent with a nutritive matter than those which surround them, and by which they are, therefore, compressed. The corneæ were incised by Ranvier, and the wounds examined after various intervals. After twenty-four hours a wound was found to be lined throughout with epithelial cells, but the epithelium on each side of the wound, far from showing any signs of nutritive hyperactivity, as might be expected in accordance with the generally accepted theory, was markedly thinner than usual, and also changed in structure. The middle layer of cubical epithelium had partly disappeared, while the deep columnar cells had broadened out, and none of the highly nutritive cells before spoken of were to be seen. The process is apparently a mechanical one. The deep cells, like soft elastic balls, are packed together at a certain tension. If a hole is cut at one spot the balls escape, of course. Ranvier saw no traces of karyokinesis or direct cell division, but even if a few cells underwent such division this would not in the least detract from the importance of the facts above referred to.

At the Surgical Society, January 6th, MICHAUX reported upon a *penetrating wound of the abdomen, produced by the explosion of a blank cartridge*. The accident was caused by the careless handling of a Lebel rifle, the muzzle of the gun being very close to the skin at the time it went off. The result was a fracture of the left iliac crest and a perforating wound of the abdomen. The wound was enlarged, and numerous pieces of pasteboard and cloth were removed from the muscular layers, but a careful examination showed no trace of a lesion of the intestine. The laceration of the peritoneum was closed, and the external wound drained. No abdominal symptoms resulted, but the compound fracture of the ilium delayed recovery for two months.

ROBERT stated that experiments made by army surgeons show that pasteboard wads in blank cartridges are projected with a rapidity of about 700 meters per second, and that the expansion of the gases is considerable. With a blank cartridge a person can blow a ragged hole in a pine board similar to that resulting from the use of dynamite. The danger of wounds of this description is very great at a distance less than fifty centimeters, and blank cartridges ought never to be fired at a distance less than two meters.

At the session of January 13th, TUFFIER expressed the opinion that *tuberculosis of the kidney is often primary and unilateral*, and, therefore, amenable to operation. If untreated, renal tuberculosis may give rise to certain accidents, to prevent which, as well as to remove a primary tubercular lesion, is the object of operation. The accidents referred to are hematuria, pain and infection, or intoxication.

Hematuria becomes an indication for operative interference only in those cases in which by its persistence or gravity it threatens the life of the patient. Tuffier had two cases of this character. In one of them the kidney was removed, while in the other it was merely incised. In both instances the hematuria was permanently relieved. In three cases under his observation pain was so persistent and severe that primary nephrectomy was performed. In two of these cases recovery was apparently perfect; in the other, a tubercular ulceration was afterwards seen in the bladder about the orifice of the ureter of the affected side. A most unusual case occurred in a physician who suffered for years with a tuberculous pyelonephritis and cystitis. Rectal examination showed a painful mass in the left part of the bladder. A cystotomy was performed, and an immense cyst was removed from the left ureter.

Accidents of infection or intoxication give the most frequent indication for operation. Such patients have an irregular fever, with evening rises, or digestive disturbances with progressive emaciation and cachexia, sometimes accompanied by pain in the region of the kidney and sometimes not, and either with or without pyuria. Tuffier operated nine times to relieve these symptoms of infection. The operations were five nephrotomies, two primary nephrectomies—one partial and one total, and two secondary nephrectomies. One of the nephrotomies died from the operation. The primary nephrectomies both recovered. Prognosis in secondary nephrectomy is very grave, and if indicated this operation should be performed with as little delay as possible, in order to remove from the body the focus of infection.

GALLIARD reported a case of *acute sigmoiditis* to the Medical Society of the Hospitals, January 8th. The patient was a woman, aged twenty-eight, who had had no movement of the bowels for a week, and had vomited for two days. Examination showed a large oval non-fluctuating tender tumor in the left iliac fossa. The pelvic organs were normal. The temperature was 39.1, C. Gas passed frequently *per anum*. A purgative was administered, the bowels moved, and the fever subsided. Although no pus was evacuated the iliac tumor rapidly

decreased in size, and was no larger than a walnut at the time the patient left the hospital.

January 15th DEBOVE reported a *fatal case of thyroidectomy performed in Graves' disease*. The operation was without any complication whatever. Only the right lobe of the gland was removed. For several hours the patient presented no unusual symptoms. About 6 o'clock of the day of operation there was slight dyspnea, which rapidly became worse, and was followed by agitation, delirium, and coma, death occurring the same night. Nothing was found at autopsy to explain this sudden death.

MARIE thought that a distinction should be made in exophthalmic goiter between those cases which begin with tachycardia and develop afterward the thyroid enlargement and those cases in which the goiter precedes the palpitation by possibly fifteen or twenty years. His study of statistics (which, unfortunately, are often incomplete on this point) has led him to believe that most of the fatal operative cases belong in the former class, and most of the recoveries in the latter. The results of treatment by thyroid extracts correspond in this respect to the results of operation, for this treatment is useless or injurious in the true exophthalmic goiter, but is beneficial in those cases of goiter which have taken on symptoms of the exophthalmic type.

Vienna.

CURIOUS THICKENING OF THE VEINS—AMBULATORY TREATMENT OF FRACTURES OF THE FEMUR—DIAGNOSTIC WORTH OF HYPERLEUCOCYTOSIS OCCURRING DURING DIGESTION.

AT the session of the Imperio-Royal Medical Society held December 18, 1896, SCHLESINGER described a curious thickening of the superficial veins which he observed in the extremities of two patients. The veins were very stiff and scarcely compressible. There were no subjective symptoms. One of the cases came to autopsy, and there was found an extensive phlebosclerosis without any sclerotic change in the arteries. He had observed several similar cases in which the stiffness of the veins was only temporary. In two of these the condition could be brought about by the application of ice or electricity, and relieved by the application of heat. One of these veins was removed. It was stiff at the time, but collapsed before the operation was finished, and neither by macroscopic nor microscopic examination could anything unusual be made out in its walls.

At the session of January 8th HAUDEK presented a case of fracture of the femur treated by him in an ambulatory apparatus, as recommended by Hessing. The principle of this and other forms of apparatus is the production of extension and counter-extension, together with fixation of the fragments. A plaster of Paris bandage fulfils better than Hessing's apparatus the last mentioned requirement, but with the disadvantage that it often produces pressure necroses and stiffness of the joint. Hence, he prefers the other apparatus, which, if carefully moulded to fit the limb, gives entire satisfaction. The advantages of ambulatory treatment are a reduction of the time of convalescence by reason of a rapid formation of callus

(the tissues being better nourished through the blood), an avoidance of atrophies, an improvement of the general health, and a prevention of a long rest in bed, which is especially dangerous for old people and drinkers.

SCHUR found as the result of investigations carried on by himself and Burian that in most cases a hyperleucocytosis accompanies digestion, but that the time of its commencement and continuance vary greatly. He, therefore, concludes that on account of its slight degree and inconstancy, and occasional absence altogether, that it has no diagnostic value as an indication of the state of the digestive faculties.

SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting held January 25, 1897.

The President, DR. LANDON CARTER GRAY, in the Chair.

R. C. M. PAGE, M.D., read a paper on
PLEURISY, ITS DIAGNOSIS AND TREATMENT. (SEE PAGE 198.)

DISCUSSION.

DR. E. G. JANEWAY said that the etiology of the disease is of great interest. It is not uncommon to meet with an explanation of the cause of the disease in cases where septic processes exist in other parts of the body. He had seen several such cases, in one of which there was a cellulitis of the arm. Pneumonia developed, followed by a rapid accumulation of fluid in the pleural cavity, which was feared to be an empyema, because of the coexistence of the cellulitis. Whispered resonance was absent, which, under these circumstances, usually means pus in the chest, but on aspiration the case was found to be one of serous pleurisy. For diagnostic purposes it is better to employ an aspirating needle rather than a hypodermic needle, and the fluid should be drawn off. He had frequently drawn off as much as twenty ounces of serum, which contained very little fibrin and no microorganisms. He thought the accepted ideas as to the etiology were not always satisfactory, and did not believe there was such a thing as rheumatic pleurisy, although pleurisy is often associated with rheumatism, and at times with pericarditis. Rheumatic pneumonia is simply a double pleurisy. In such cases he has introduced a needle into the top of the lungs, and found fluid in most of them.

Another diagnostic point is the differentiation between pneumonia and pleurisy. In pneumonia of the lower lobe there is always a line of flat dullness; in pleurisy a line is also found, its highest point being in the axilla, lower in front and lower behind. Of course if there are adhesions, the curved line will not come out so completely. A change of position will also make a difference. In pneumonia associated with a compressed bronchus, the differentiation is not difficult. Two methods can be employed, one of which is mensuration,

which is too often neglected in the diagnosis of chest diseases. With a pleurisy filling one side of the chest, there will be increased mensuration on that side. With pneumonia and a compressed bronchus there is rarely an increased mensuration. The second test is the heart displacement, which is of great importance. In pneumonia the heart will be in a normal position; in pleurisy, it will be displaced. Attention to these points will save a good deal of time and trouble, and will sometimes prevent the introduction of needles into an adherent lung. Mensuration should always be employed before aspiration. In regard to voice sounds, in an obstructed lung there will be an absence of whisper resonance; in pleurisy with effusion, the voice will sound distant, and in empyema there may be a total absence of voice.

As regards the use of blisters, he thought that they are not infrequently of service. He had seen blisters applied in the first stage that were apparently followed by almost instantaneous cessation of pain. The use of salicylate of soda is followed by good results in the rheumatic type of cases, improvement occurring rapidly, from which fact it might be inferred that the pleurisy is rheumatic in origin. He advocated dry diet, allowing fluid equal to two-thirds of the amount of urine passed by the patient in twenty-four hours. He uses iodid of potassium in some cases, but has found that patients with much fever do not stand this treatment well, in which case it must be stopped and tried later on.

Rules regarding when to aspirate are variable, and at times a good deal depends upon the patient. Some will not submit to aspiration, and then it must be postponed until their frame of mind changes. Aspiration should always be employed when there is dyspnea, which renders the patient uncomfortable, never mind at what stage of the disease. In regard to the point at which to aspirate, he preferred the fifth or sixth interspace in the axilla, or between the eighth or ninth ribs in the scapula line, and never higher, except in those very rare cases of upper lobe pleurisy. He had met with several instances where the pleurisy was sacculated in the upper lobe, and there was no fluid below. Such cases are most difficult of diagnosis, and their nature could be determined only by aspiration or exploratory puncture with a hypodermic syringe. In regard to the effect of aspiration, he thought that even the withdrawal of a hypodermic syringeful of fluid will relieve the pleurisy, and that not only does it do good at the time, but afterward. He thought this was due to the fact that the pleura is actually punctured by the aspirating needle, allowing the fluid to drain into the subpleural tissue whence it is absorbed.

In tuberculous pleurisy, he had tried a plan of treatment which had met with success in two cases. He had injected creosote in alcohol into the pleural cavity with good results. In a third case, empyema had followed, which was probably due to some infection. In cases of pus in the pleural cavity everybody agrees that the best thing to do is to incise and drain. It is a waste of time to aspirate in such cases.

DR. H. P. LOOMIS said the subject of the etiology is a very important one, and one in which he was especially

interested, as he had been making a study of it for the last five or six years. As his observations had been made in the autopsy room, his conclusions were based upon facts and not upon theories, and his opinions were confirmed by investigations of foreign observers.

The idea of the tuberculous origin of the disease had not been borne out by his studies. Of course, there are cases in which pleurisy has been followed by tuberculosis, but these are not tuberculous in the beginning. Within a day or two he had gone over a list of 300 autopsies made under his personal supervision during the last year or two, of which notes had been carefully taken, and especially so in regard to the condition of the pleural cavity and lungs. Of these 300 cases twenty-seven showed an acute pleurisy, of which only three were tuberculous. Another set of ten cases showed subacute pleurisy, and two of these had advanced tuberculosis, which had apparently preceded the pleurisy. Another interesting point was that when pleurisy develops in cases of advanced phthisis, it seemingly causes the latter disease to come to a standstill.

Regarding the presence of fluid in the chest in pleurisy preventing the formation of adhesions, he had tried injecting sterile fluid into the chest for this purpose, but had never been able to find any which would remain there without being absorbed. In his observations over fifty per cent. of all cases of pleurisy showed adhesions, indicating, in some instances, a localized pleurisy, from which the patient recovered.

DR. FRANCIS DELAFIELD said that the relationship between tuberculosis and pleurisy was something which had been very much written and talked about during the last few years, so much so that some conclusion should be arrived at. To do this it was first necessary to determine what is meant by "tuberculous inflammation." In his opinion, this was an inflammation in which tubercle bacilli were present in the inflamed tissues and in the exudation. He did not think a pleurisy could be called "tuberculous" unless tubercle bacilli were found in the pleura and in the exudate.

There are four different conditions under which pleurisy may be found. In the first place, there may be a localized tubercular pleurisy without tubercle bacilli in the lungs. In the second place, there are patients with tuberculous lungs and tuberculous pleurisy. Thirdly, there are patients with tuberculous lungs and a pleurisy that is not tuberculous—in which no tubercle bacilli can be found in the pleura or in the exudate; in other words, a simple pleurisy occurring in a person afflicted with tuberculosis. And lastly, there are ordinary cases of pleurisy with effusion, acute or subacute.

In regard to the treatment of pleurisy with effusion, the speaker said that in the early years of his experience he had followed the routine plan, consisting of the repeated application of blisters to the chest, and the administration of iodid of potassium and digitalis, and waited for the fluid to be absorbed. If fluctuation were present the fluid was drawn off with the trocar. He first gave up the blisters, then he began to give less and less drugs, and then he began to aspirate earlier and earlier, until, within the last

four years, he had reached the conclusion that aspiration was the treatment for pleurisy, and was to be employed not merely to draw off the fluid, but to cure the disease in the shortest space of time. Now his ordinary routine treatment is to aspirate for the cure of the pleurisy in all cases in which there is an appreciable amount of fluid in the chest cavity, it mattered not whether the case was one of acute or subacute pleurisy, or whether or not the patient was uncomfortable. As to the amount of fluid to be drawn off, this varies with the amount present; if there is not much he draws off all he can; if the chest is distended with fluid he draws off a moderate quantity. The largest quantity he had ever drawn off was 3,700 cc., and the smallest 90 cc. Ordinarily only one aspiration is required, and a week later the patient is generally well enough to get about. He thought that any one who follows this method of treatment will be surprised to find how much the duration of the disease is shortened. He thought that most cases of simple pleurisy with effusion get well in the long run—sometimes in two or three weeks, sometimes in two or three months; but it makes a great deal of difference to most people whether they get well in two weeks or in two months, and for this reason he considered the treatment of pleurisy by aspiration to be the best, and therefore recommended it highly.

DR. J. S. WINTERS said in regard to whispered resonance, that it seemed to him that this depends largely upon the amount of fluid present between the lung and the chest wall. In simple pleurisy with effusion, which has lasted for several weeks, resonance is absent, as in cases of empyema. The reason why whispered resonance is almost invariably absent in cases of empyema is because there is extensive thickening of the pleura, and it is absent in some cases of pleurisy with effusion for the same reason. He said that he was very glad to hear the remarks of Dr. Delafield with regard to aspiration being looked upon as a means of curing pleurisy with effusion. The fluid in these cases usually undergoes absorption, which lasts week after week and month after month, while the physician waits for it to disappear; whereas a permanent and early cure can be effected by aspiration. The withdrawal of a large amount of fluid, he thought, is apt to do harm if there is much effusion, while the withdrawal of a comparatively small amount stimulates absorption, and this may be repeated many times with impunity. He was of the opinion that much harm has been done by neglecting this simple and harmless procedure. He saw no reason why a case of simple effusion should not be incised and drained if several aspirations fail to relieve the disease.

In his experience he had found that in cases of serous effusion in children absorption took place rapidly (in from one to four weeks) without operative interference.

DR. BEVERLEY ROBINSON said that it was difficult to add anything to the discussion, as all the important points had been so thoroughly covered. He could only confirm what other speakers had said. He was very happy to hear Dr. Delafield speak in such decided terms of what he had personally long believed to be the proper treatment of pleurisy. His internes at St. Luke's Hospital could

bear out his statement that for the last ten or fifteen years he had aspirated whenever there was fluid in the chest. He thought this should be the rule in hospital practice, and in private practice, too, if possible. However, there were certain reasons, which were known to his hearers and which needed no further mention, connected with private practice which made it sometimes impossible to treat cases as one would in a hospital. He was of the opinion that aspiration of the chest does no harm, and almost invariably does good. In his personal experience he had never seen a case in which aspiration, properly performed, had done harm to the patient, and many times in the *post-mortem* room he had regretted that he had not aspirated. He had met with many cases of pleurisy with effusion and pneumonia following or accompanying "grippe," and sometimes it was difficult to make the diagnosis. He had seen cases in which there was no marked diminution of vocal resonance and no absolute dulness or flatness on percussion. He had been unable to explain this to himself, but thought it was due to the differences in the thickness of the chest wall and the different capacities of different chests. All of these reasons seemed to him at times to explain an error in diagnosis. Some men seemed to have a dread of aspiration for some reason—probably because they feared evacuation of the fluid in acute fibrinous pleurisy would increase the danger of adhesions forming, and also that the pleurisy might be changed into an empyema. He was also of the opinion that in a limited number of cases the application of a small blister to the area of pleuritic inflammation is almost always a means of aborting the inflammatory condition, and will sometimes prevent the formation of fluid in the chest.

He laid great stress upon the fact that the majority of these cases have no tuberculous taint. This was especially true of cases among the better class of patients. The sputa of such patients should always be examined for tubercle bacilli. The salicylates he considered of but little value in the treatment of pleurisy, unless manifestations of underlying conditions showed over and above the pleurisy.

DR. CHARLES E. QUIMBY said that he regretted that he had not had the success promised by Dr. Delafield in treating pleurisy by aspiration, although he was willing to say that this might have been due to lack of care in other ways. According to statements made in the discussion in regard to the etiology of the disease, there are two classes of cases—those in which the disease is due to bacterial origin, and those in which it is dependent upon the development of a toxin, *i. e.*, ptomain poisoning. He did not believe that good results could be obtained by treating these two classes of cases in the same way, for one is due to the presence of a distinct bacterium and the other to the existence in the blood of a substance which is soluble and capable of being absorbed. He could not help feeling that lack of knowledge as to the etiology of the disease had very much to do with the difficulty in determining what line of treatment should be employed. These cases have very different constitutional symptoms, which are dependent not so much upon the resisting

powers of the patient as upon the primary cause of the disease. He found himself treating pleurisy by means of calomel and Warburg's tincture, not thinking of the pleurisy itself, but of the toxemia which caused it. Of course, the administration of such drugs had no effect upon the first class of cases, *i. e.*, those due to bacteria.

He had been in the habit of using the pneumatic cabinet referred to by Dr. Page, and thought the benefit derived from it was due to the chest gymnastics, which causes expansion of the lungs and improves the local circulation, and not to any direct pulling upon adhesions. Hill climbing had a similar effect. He thought that any attempts at breaking up adhesions, if carried too far, would increase them, but that any exercise which will improve the pulmonary circulation will relieve the contraction of the lung, which is marked by shortness of breath that is so distressing, unless the lung has gone on to complete contraction. In one case of his, in which the diagnosis had been made by Dr. Janeway, the whole upper part of the lung was covered with adhesions, and there were abundant sticky, plastic râles, and the patient was becoming worn out and thin; relief followed the systematic use of the cabinet.

Nothing had been said about the cough of dry pleurisy. He was convinced that there is no such thing as a useless cough, and the cough of dry pleurisy showed that it is intended to irritate and stimulate the circulation, just as nitrate of silver stimulates the circulation of the tissue upon which it is applied.

DR. W. H. KATZENBACH was glad to hear mentioned the importance of cardiac displacement and mensuration in the diagnosis of pleurisy, and thought many doubtful cases might be cleared up by these means. Regarding the use of the salicylates, he had employed them with good results, especially in rheumatic patients. He was in favor of early aspiration in sero-fibrinous pleurisy, generally waiting until after the first stage, which lasts a week or ten days, but not always until the fever has subsided. The point he selects is at the angle of the scapula, usually in the eighth space, because there one can get near the point where the fluid gravitates. He had withdrawn as much as four or five pints without ill effects, and preferred to use an aspirating needle rather than a hypodermic needle, because of the larger diameter of the former.

DR. EGBERT LE FEVRE said that when we remember the curved line of Ellis is formed by the rising of the lung, it is of great diagnostic significance in determining whether there is fluid present in the pleural cavity and whether there is a pathologic condition of the lung which prevents it from retracting and exercising a suction action upon the fluid and rising up in the axilla. In this way it is possible to determine whether the pleurisy is primary, or secondary to some other diseased condition of the lung. In regard to the absence of whisper resonance in empyema, he had seen cases in which it was distinctly marked. As to the treatment of pleurisy with salicylic acid, he referred to observations which had been made in which salicylic acid had been found in the pleura almost immediately after it had been administered, and that,

therefore, it was probable that it had a local curative action.

DR. PAGE, in closing the discussion, said that cases in which there was fluid at the top of the chest were very rare. He had only seen one case, and that had proved to be a hydatid cyst. Regarding aspiration of the pleural cavity in pleurisy with serous effusion, he did not think he would aspirate on the third day, in spite of what had been said. He would wait at least two weeks. He referred to two communications which he had received in connection with his paper, the substance of which was as follows:

DR. FREDERICK C. SHATTUCK of Boston: My teaching from Bowditch and others was not to tap pleural effusions unless their size made them urgent in the acute stage. This practice I followed for awhile, but as time has gone on and personal experience has accumulated, I have been led to tap earlier than formerly, and, I think, with benefit. I tap now: (1) Large effusions, of course, immediately, not, however, attempting to empty the cavity. I stop as soon as constriction of the chest or cough or pain is at all marked. (2) A chronic effusion I also tap promptly unless it is a complication of *pulmonary tuberculosis*; in this case I may delay. (3) Acute pleuritis with effusion moderate in amount I do not tap, as a rule, unless they give rise to discomfort. I wait a week or so for spontaneous absorption, aided by dry diet and purgatives. But I do not wait for fever to subside to interfere, and have thought, in a number of cases, that the disappearance of the fever was hastened by operation. It would seem reasonable to think that if we wait too long tough adhesions are more likely to form, rendering the reexpansion of the lung more difficult, and complete restoration more tardy. When I believe the fluid in the chest is under tension, I do not use the aspirator, preferring the gentle and more uniform force of siphonage.

In most cases I do not believe it possible to entirely empty the chest with the needle or trocar. Oftentimes the removal of a moderate amount of the fluid seems sufficient to start up absorption of the rest.

DR. JAMES TYSON of Philadelphia: (1) By far the most reliable physical sign of pleurisy is absent or diminished fremitus, in my experience, almost without exception. I am aware, that, in the empyemas of children, it is said that fremitus is sometimes increased, but, though my experience is not large in that line, I have not met such a case. (2) I rarely find it necessary to use the needle in diagnosis; indeed, almost never. I see, however, very little or no danger in it, provided it is used with aseptic precautions. (3) I cannot say that I have been often able to verify the curved line of Ellis, but it may be that I have not been often forced to do so. (4) The treatment required varies so much with the severity of the disease that it is not easy to state it briefly. In severe cases, with extensive involvement of the pleura, wet cups are decidedly the most efficient remedy for the relief of pain and cutting short the process. Between hot and cold applications the former is the more satisfactory, but neither is sufficient to relieve pain when it is

severe. Even large hypodermic injections of morphin are temporary in their effect, while wet cups are permanent and lasting. Strapping the chest with strips of adhesive plaster is a helpful measure.

In limited areas of inflammation, I use blisters and hypodermic injections of morphin for the relief of pain.

I have not used sodium salicylate largely, and prefer the iodid of potassium for promoting the absorption of effusion.

I do not aspirate early in the attack unless the patient is in danger from the excess of effusion, preferring to await the abatement of the fever, because while this lasts I consider the inflammation as still going on, and that the fluid will reaccumulate. Where the effusion is not large, I prefer to wait awhile to give Nature a chance to assert herself, aided, if possible, by the iodid of potassium, blisters, diuretics, purgatives and dry diet. Often these measures suffice. When I tap I generally take away all I can get, though I have not infrequently been compelled to desist because of pain and coughing. I always use the aspirator. Empyemas I hand over to the surgeon for drainage. Simple sero-fibrinous effusions, which are promptly followed by recovery, I do not consider of tubercular origin, though I believe empyemas are.

I have not heretofore availed myself of hill-climbing or the pneumatic cabinet in the after treatment, though I recommend patients to use gymnastics which favor the expansion of the chest and inflation of the lungs.

(5) One word with regard to sudden death in pleurisy with large effusions. It is an ever-present menace to me, because within a year past it has happened to me to have a patient in a condition of supposed convalescence, and to have him die within two hours after I left him. He was a clergyman between thirty-five and forty years old, who acquired a pleurisy in which the effusion took place rapidly, and the right pleural cavity soon filled up almost to the top, and aspiration became necessary. I never had a case of sudden death during tapping, but for some reason I feared it in this case. I tapped him while he was lying down, removing a large quantity of fluid, but not all. He seemed much relieved, and, as I have already stated, I considered him convalescent when he died suddenly. On autopsy I found a good deal of fluid still present, and I think it had reaccumulated after the tapping. No cause could be found for the sudden death. There was no valvular lesion, though the heart appeared softer than natural, but without microscopic examination.

REVIEWS.

MODERN GREEK MASTERY. A Short Road to Ancient Greek. By THOMAS L. STEDMAN, A.M., M.D. New York: Harper & Brothers. 1896.

The purpose of this new introduction to modern Greek is well explained in the preface. The author believes that the study of the modern language, as he represents it, is the best road for a student to take who is desirous of becoming acquainted with the literature of ancient Greece. He also cherishes the idea that the so-called "pure"

modern Greek (γλῶσσα ἀθαρείουσα) may become a common medium of expression for international congresses and the like. These views are not held by any large number of competent scholars, though it would be unfair to say that they have not been advocated by some whose opinion is entitled to respect.

A modern Greek learner has unquestionably considerable advantage over a foreigner in beginning study of the ancient language. Of course, his ear is already accustomed to the sound of many words in the ancient literature, and the new vocabulary will give him comparatively little trouble. For the more advanced student, however, the modern language is not especially helpful. Is it worth while then for a foreigner who wishes to learn ancient Greek, but who cannot have the training for his ear which a visit to Greece might give, and is thus debarred from putting himself in the place of a Modern Greek beginner, to take the time from his reading of the easier Attic authors and from his study of the excellent short grammars of the ancient language, which are at the disposal of every student, that he may master the highly artificial dialect which is set forth in such books as this of Dr. Stedman, and in others like it? Most people will say that it is not worth while. For this dialect is artificial. It is not the language *spoken* throughout the Levant, nor is it the language of the real literature of modern Greece—a literature which is redolent of the very soil from which it springs, and is the foundation upon which there is still hope that a more highly developed literature may some day arise.

To discuss such questions is not within the province of a brief notice like the present one. It is enough to say that Dr. Stedman's statement on pp. iv. and v. of his preface in regard to the relation of modern to ancient Greek and the analogous relation of modern to early English would not generally be admitted. And, if this is not admitted, his theory as to the best method of approaching the study of the ancient language cannot be accepted.

In regard to the possibility of using this "reformed" language in international deliberations—that is a matter for the future to decide. When one is able to hear it in a running *ex tempore* debate in the Athenian *Boulē*, its adoption by foreigners may seem more likely than it at present does.

But, if we cannot take the point of view which the school represented by Dr. Stedman advocates, this point of view once taken, his book may be highly commended. If the student wishes to learn to read the more important Athenian newspapers or the New York *Ἀτλαντίς*, the *Modern Greek Mastery* will be an excellent guide to him. On the other hand, if he wishes to travel in Greek lands and to know the cordial and interesting Greek of the village and country, he had better turn to other books for help. When his host gives him a morning greeting and asks the familiar question, *καλημέρα καλὴ, κύριε*; he will have to turn to Dr. Stedman's *appendix* to know what the singular k-form can mean. Such forms are "vernacular;" in other words, they are what the modern Greek learns at his mother's knee, and what he commonly uses when speaking naturally.

The general plan of the book seems admirable, and

the exercises are excellently adapted to their purpose. The typography, also, leaves nothing to be desired. The simple and clear statement on page 5 of the twofold pronunciation of *x* is a matter too often overlooked.

TRAITÉ DE MÉDECINE ET DE THÉRAPEUTIQUE. By P. BROUARDEL, A. GILBERT, and J. GIRODE, Assisted by a staff of collaborators. Paris: J. B. Baillière et fils, 1895.

THIS stupendous work promises to be a system or cyclopedia of medicine, rather than an ordinary treatise. Brouardel is so well known that any work emanating from his pen is deserving of careful perusal and study. Among the collaborators are to be found names which have become famous in French medical thought and investigation. It would be invidious to single out such names as Deschamps, Dupré, Galliard, Gaucher, Graucher, Hallopeau, Hanot, Hayem, Lancereaux, Landouzy, Laveran, Netter, Roger, Tessier, Vidal, and Wurtz as deserving of special mention among the other equally famous men who have lent their aid to what promises to be (if we may judge from the first volume) a monumental work on French medicine.

The work will be published in ten volumes. Judging from the amount of space devoted to each subject in the first volume, ten volumes the size of the first, which contains 814 pages, will be insufficient to complete it, or the subsequent volumes will have to be increased in bulk, or, finally, the matter in the other volumes will have to be condensed and contracted to keep the work within the proposed limits.

The first volume deals with the microbic diseases. The various chapters therein are very complete, and represent the knowledge thus far acquired concerning the diseases discussed. There can be no doubt that the subjects are extremely well treated, and among them may be mentioned that on scarlatina, by Wurtz; grippe, by Netter; diphtheria, by Graucher and Bouloche; an excellent article on streptococcic infection, by Vidal; pneumonic infection, by Landouzy, and, finally, one on typhoid fever, by Brouardel and Thoinot. We notice with pleasure that in some of these articles race hatred is put aside, and that free credit is given to German thought and German methods of treatment.

ANNOUNCEMENT.

MINIMUM REQUIREMENTS OF THE PENNSYLVANIA STATE BOARD OF HEALTH, FOR THE PRODUCTION OF VACCINE VIRUS, ANTITOXIN, TUBERCULIN, AND OTHER ANIMAL PRODUCTS USED IN MEDICINE.

I. *Location of Establishments.*—The open country, or the suburbs of a town or city, should be selected. In such locations cattle will be more easily secured, the air will be more wholesome, and the disposal of manure can be more satisfactorily accomplished. Great care should be taken to secure a dry, warm, and sheltered location, with every facility for complete drainage.

II. *Buildings.*—The buildings should be erected with

all known sanitary requirements in mind. They should be warm and sunny in winter, and cool and dry in summer. Complete arrangements should be made for ventilation and sewerage. Windows should be numerous, for changing of the air when needed. Blinds and fly-screens should be provided for summer. Wooden stables should be preferred to those of stone or brick, because they can be kept dryer. Brick buildings, with air-chambers in the walls, however, will answer.

There should be at least two stables and an operating-room. One stable should be for the reception of cattle and for those which have been operated upon. Here the cattle may be tested and examined. The second should be the incubating stable. The operating-room should not communicate directly with the incubating stables, but by a passage. It should be well lighted by windows and sky-lights, and have abundant means of ventilation. The walls may be either of matched boards and painted, or of plaster, which should be frequently whitewashed. The floor may be of concrete, and so constructed with drains that they may be easily washed and kept absolutely clean. All the woodwork of the stables should be of smooth finish, to permit of ready cleansing and disinfection.

III. *Qualifications of Proprietor or Superintendent.*—The person in practical charge of vaccine production should be either a physician or a veterinarian, trained in general sanitation and hygiene, bacteriology and pathology. He should have an intimate knowledge of the pathology of infection, and of the principles of *asepsis* and *antisepsis*. He should be trained in animal pathology, especially on the subjects of *septicemia*, *tuberculosis*, *Texas fever*, *anthrax*, *glanders*, *foot and mouth disease*, and *skin diseases*.

IV. *Choice of Animals.*—1. The age of cattle should not be under three months nor over thirty months.

2. The history of the cattle should be minutely inquired into. Any with tubercular history should be excluded. All animals previous to admission to the stables with other animals should be carefully tested with tuberculin. They should be subjected to rigid physical examination. Any with persistent fever or cough should be at once excluded. Strong animals should be used, never those that are pregnant or those which have recently calved.

V. *Care of Animals.*—1. Animals should be treated kindly and considerately. They should be allowed to rest after arrival. They should be carefully cleaned, and clipped if needed; every day they should be carefully groomed and any sores or injuries attended to.

2. They should be well fed and watered. Good food should always be chosen. Any very dust-bearing food in a dry state should not be used. The food at some time in the day should contain grain. Hot mashes are useful. The water supply should be ample. Animals with fever, like human beings, need water. Hay and other food should always be absolutely free from mold. Bran and sweet corn chopped with hay are the best winter foods. In the summer time such crops as green rye, green wheat, grain, cow peas, German millet and

sowed corn may all be used. Ensilage should not be fed. When any animal refuses to eat or drink for twelve to twenty-four hours, the vesicle will abort and should not be used.

The stables should be kept *absolutely clean*. This is secured by having one man devote his whole time to this work, and droppings should be removed at once. The stables should be liberally bedded with clean wheat straw (oat straw should not be used), swamp hay, dry sawdust, or German peat. The latter, from its great absorbent power and antiseptic action, is highly commended.

In the winter term a temperature of 62° F. is correct.

Under no circumstances should the cattle be confined by immovable stanchions.

At least twice a year there should be a general and complete house-cleaning. The woodwork should all be scrubbed with hot water and soda, and then wiped with a solution of mercuric chlorid.

VI. *Precautions in Operating*.—1. The animals should be fed properly and washed thoroughly, if necessary, in such a manner as to render them practically antiseptic before operation.

2. The operating room shall be at all times aseptic; floors, walls and ceilings must be of matched hard pine, or other hard wood, and oiled. They shall also be washed in bichlorid of mercury solution from time to time.

3. The operators shall, before operating, render their hands and instruments aseptic, and put on a clean garment covering their other clothing, which garment must be washed and boiled as often as it becomes soiled; they shall also wear a cap of like material, and treat it in the same manner, or disinfect the head and hair thoroughly.

4. All operations, and the care of virus after taking, shall be under the supervision of a competent bacteriologist, and no virus shall be taken from any calf until it has passed his inspection.

5. Inoculations may be made on escutcheon, back, or belly. The first is preferred.

6. Instruments, hands of operator, skin of animals, and all apparatus, should be kept sterile at all times. Points, tubes, or other containers should be sterilized by heat.

7. The seed should be good, clean lymph. Lymph tinged with blood may be used; it is often the best. Crusts or pussy lymph should not be allowed as seed.

8. Antiseptics should be freely used on the skin after shaving and before inoculation.

VII. *Collecting the Lymph*.—The lymph is collected from the fifth to the seventh day, as determined by the areola and the temperature of the animal, which now reaches the highest point, *viz.*, 102–104° F. The virus is always taken before the vesicle reaches the pustular stage. The vesicle is well sponged with warm water, the crust removed, and the exuding virus collected on a sterilized camel's hair brush and transferred to sterilized ivory points, or collected in sterilized vials or glass tubes. The old method of dipping the ivory points into the vesicle, being painful to the animal and non-hygienic, should

be discontinued. No pressure should be used on the vesicle, which should be allowed to yield its lymph of its own accord.

After the lymph has been secured the vesicle should be well oiled, and the animal carefully protected for several days, after which it may be removed to the first stable until convalescence is fully established.

VIII. *Care of the Lymph*.—The virus may be placed on the market on ivory points or quills, or in tubes and vials.

Points and quills should be carefully dried in a sterilized receptacle and put up in sterilized paper, or sterilized metallic tubes or bottles, and sealed. Virus to be placed in vials or tubes is first mixed with chemically pure glycerin, and then sealed hermetically. As an additional preservative trikresol may be added.

Every package of virus must have on it the name and address of the propagator, and the date when the virus was taken.

No vaccine virus will be approved by the State Board of Health of Pennsylvania unless propagated in accordance with the provisions of the aforesaid rules.

IX. *Requirements for Diphtheria Antitoxin, Tuberculin, Mallein, and Other Animal Products Used in Medicine*.—The establishments for the production of these animal products shall possess all the sanitary requirements as for vaccine production. They shall be in charge of a person trained in medicine, bacteriology, general sanitation, and pathology. The animals employed shall in all cases be strictly healthy, and shall be cared for in a healthy and humane manner. The premises shall at all times be kept *absolutely clean*. All operations shall be performed with the greatest possible care, observing all known antiseptic precautions.

X. To receive the certificate of the Pennsylvania State Board of Health any establishment producing any animal product used in medicine must at all times be freely open to the Board, its agents, and inspectors. Every such establishment must be conducted in such manner as the Board directs, and must submit to inspection by experts in bacteriology, pathology, and veterinary medicine so often as the Board may direct. All the processes employed, both in the production of the products, as well as in their preservation, must be made known to the Board.

XI. No preparation of antitoxin, tuberculin, mallein, or other animal product used in medicine shall be offered or exposed for sale in Pennsylvania unless the receptacle containing such preparation bear a label, or upon a circular accompanying such receptacle and enclosed with it in a sealed package, shall be printed or written the date of the production, and the value of the contents in antitoxin (or other products) as measured by some generally recognized standard.

XII. All certificates issued by this Board for animal products shall be dated, and shall be good for one year only, which shall be stated in each certificate. They may be revoked for cause at any time.

G. G. GROFF,

Chairman Committee on Preventable Diseases.